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ABSTRACT

The administrative and supervisory competencies that a medical technology student should acquire before graduation were investigated. Selected medical technology laboratory supervisors and administrative technologists in the Houston-Galveston, Texas area were surveyed to determine the tasks performed by the medical technology laboratory supervisor. A Clinical Laboratory Supervision Survey was also sent to four national random samples of members of the American Society for Medical Technology, and 565 usable responses were obtained. Based on a literature review and the respondents' rankings of task importance and time requirements, a hierarchical scale of task categories was derived as follows: direct supervision tasks and monitoring tasks (same ranking); general operations tasks, personnel relations tasks, communications tasks, and education tasks. Knowledge base requirements for 15 of the supervisory tasks were also established. Considerable differences were found in the clinical laboratory functions of the administrative technologists and the laboratory supervisors. Appended materials include: questionnaires and cover letters and study findings regarding tasks performed in direct supervision, general operations, education, and communications. (SW)

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TASK ANALYSIS OF MEDICAL TECHNOLOGY ADMINISTRATION AND SUPERVISION AS A FOUNDATION TO A CURRICULUM LADDER

A Dissertation

Presented to

the Faculty of the College of Education

University of Houston

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

---

by

Kathleen Elizabeth Becan-McBride

May 1977

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A Dissertation for the
Doctor of Education Degree

By

Kathleen Elizabeth Becan-McBride

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ABSTRACT

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Committee Chairperson: Dr. Barton R. Herrscher

The purpose of this study was to determine the administrative and supervisory competencies that a medical technology student should acquire before graduation from a school of medical technology. It was conducted by surveying and analyzing the administrative and supervisory tasks performed in the clinical laboratory.

Focusing on the following research questions and hypotheses permitted the study to accomplish its purposes:

1. In which hierarchical sequence should the medical technology laboratory supervisory tasks be taught? Emanating from this research question was the following null hypothesis: There is no correlation between the laboratory supervisors' rankings and administrative technologists' rankings on the tasks' teaching importance.

2. What amount of time is devoted to performing each of the medical technology laboratory supervisory tasks? Emanating from this research question was the following null hypothesis: There is no correlation between the laboratory supervisors' rankings and administrative technologists' rankings for time requirements of the tasks' performance.

3. What is the knowledge base requirement for each of these tasks?

Two instruments were used to collect data for this task analysis study. The first instrument, a pilot task survey questionnaire, was administered to selected medical technology laboratory supervisors and administrative technologists in the Houston-Galveston area to determine what tasks the medical technology laboratory supervisor performs. It was determined that 40 tasks from this pilot questionnaire would serve as the bases for the second instrument.

The second instrument used in this study, the Clinical Laboratory Supervision Survey, was the major instrument from which the data analysis was performed. This questionnaire was sent nationwide to four random samples of members in the American Society for Medical Technology. These samples were obtained from the Society's job category listings and were composed of administrative technologists, laboratory supervisors, education coordinators, and staff technologists. From the four samples, a total of 565 questionnaires were returned within a seven week period. The information from the respondents formed the basis for the study.

The major findings were divided into demographic characteristics, performance of supervisory tasks, tasks' teaching importance, tasks requiring the most time, and knowledge base requirements for the administrative and supervisory tasks.

The major conclusions were:

1. There is a lack of participation in in-service and continuing education programs. Thus, employers

are encouraged to provide opportunities for participation of clinical laboratory personnel in these educational activities.

2. There is a considerable difference in the clinical laboratory functions of the administrative technologists and the laboratory supervisors.

3. Laboratory supervisors ranked the teaching importance of supervisory tasks differently than administrative technologists. There was a similar lack of agreement between the two groups on the tasks' time requirements. Due to the contrast in the laboratory supervisor's role and the administrative technologist's role as supervisory tasks performers, it seems reasonable that these two supervisory groups would rank the tasks differently.

4. The establishment of a hierarchical scale for the set of medical technology administrative and supervisory competencies was devised from the laboratory supervisors' rankings of the tasks' teaching importance and tasks' time requirements.

Based upon the review of the literature, the findings of the study and subsequent conclusions, a hierarchical list of competencies was developed by the author to serve as a basic design for a medical technology administrative and supervisory instructional program. Furthermore, it is recommended that learning activities and proficiency tests should be derived from the administrative and supervisory competencies in order to have a complete instructional program in medical technology administration and supervision. Finally, additional research is needed to explore courses of action that will motivate medical technologists to become participants in continuing education activities.

TABLE OF CONTENTS

Chapter		Page
I.	INTRODUCTION	1
	Importance of the Study	2
	Statement of the Problem	5
	Research Questions and Hypotheses	6
	Assumptions	6
	Limitations of the Study	7
	Definitions of Terms	8
II.	REVIEW OF THE LITERATURE	11
	Development of Job Evaluation	11
	Analysis of Jobs	12
	Task Analysis	14
	Factor Analysis	18
	Related Allied Health Studies	21
	Summary	30
III.	PROCEDURES AND METHODOLOGY	33
	Instrumentation	33
	Population and Sampling Technique	34
	Data Collection	36
	Statistical Procedures	37
IV.	ANALYSIS AND INTERPRETATION OF FINDINGS	39
	Demographic Characteristics of the Respondents	39
	Place of Employment	40

UOL 9

Chapter Page

Educational Qualifications 43
Employment Characteristics 45
Summary of Demographic Characteristics . . . 50
Performance of Supervisory Tasks 50
Personnel Relations Tasks 52
Direct Supervision Tasks 59
Monitoring Tasks 61
General Operations Tasks 63
Education Tasks 69
Communications Tasks 71
Summary of Data on Supervisory Tasks 73
Tasks' Teaching Importance 74
Tasks Requiring the Most Time 75
Knowledge Base Requirements 77
Task Detailing 79
V. SUMMARY, CONCLUSIONS, AND IMPLICATIONS 86
Summary 86
Conclusions 89
Implications 94
Suggestions for Further Research 106
REFERENCES 108
APPENDICES 114
A. Letter of Agreement 115
B. Task Survey Questionnaire 118

Appendices Page

C. I. Premailing Form: Clinical Lab Supervision Survey 124

II. Cover Letter 129

D. I. Clinical Lab Supervision Survey 131

II. Cover Letter 136

E. Follow-Up Postcard 137

F. Performers of Direct Supervision Tasks 139

G. Performers of General Operations Tasks 144

H. Performers of Education Tasks 149

I. Performers of Communications Tasks 154

VITA 159

LIST OF CHART AND TABLES

Chart — Page

1. Factor Analysis Chart 22

Table

1. Response Distribution by Place of Employment . . 41
2. Response Distribution by Hospital Size 42
3. Highest Level of Formal Education of the Five Job Categories 44
4. Length of Employment in Medical Technology for the Five Job Categories 46
5. Number of Clinical Laboratory Personnel Under Supervision of Respondents 47
6. The Type of Educational Program at Respondents' Places of Employment 49
7. Performers of Personnel Relations Tasks in the Clinical Laboratory, Total Respondents' Selection 53
8. Performers of Personnel Relations Tasks in the Clinical Laboratory, Laboratory Supervisors' Selection 55
9. Performers of Personnel Relations Tasks in the Clinical Laboratory, Administrative Technologists' Selection 56
10. Performers of Personnel Relations Tasks in the Clinical Laboratory, Education Coordinators' Selection 57
11. Performers of Personnel Relations Tasks in the Clinical Laboratory, Staff Technologists' Selection 58
12. Performers of Direct Supervision Tasks in the Clinical Laboratory, Total Respondents' Selection 60

Table | Page

13. Performers of Monitoring Tasks in the Clinical Laboratory, Total Respondents' Selection 62

14. Performers of Monitoring Tasks in the Clinical Laboratory, Laboratory Supervisors' Selection 64

15. Performers of Monitoring Tasks in the Clinical Laboratory, Administrative Technologists' Selection 65

16. Performers of Monitoring Tasks in the Clinical Laboratory, Education Coordinators' Selection 66

17. Performers of Monitoring Tasks in the Clinical Laboratory, Staff Technologists' Selection 67

18. Performers of General Operations Tasks in the Clinical Laboratory, Total Respondents' Selection 68

19. Performers of Education Tasks in the Clinical Laboratory, Total Respondents' Selection 70

20. Performers of Communications Tasks in the Clinical Laboratory, Total Respondents' Selection 72

21. Median Rankings of Tasks' Teaching Importance by Supervisory Groups 75

22. Median Rankings of Tasks' Time Requirements by Supervisory Groups 76

23. Supervisory Tasks Rated By Guilford's Cognitive Products 79

24. Task Detailing of Laboratory Supervisory Tasks 80

CHAPTER I

INTRODUCTION

With the increasing complexity of knowledge and the expanding role of the medical technologist, medical technology educators have had to extend the medical technology curricula beyond laboratory medicine to include the areas of administration and supervision. The study by Gleich and Routh (1974) asserts:

> The medical technology baccalaureate individual tends to be many times, in a supervisory capacity and involved in larger clinical laboratory settings; thus, the baccalaureate medical technology program should include courses in administration and management, automation and computers, to better prepare technologists for their future needs (p. 164).

Supervision is also stressed by an American Society for Medical Technology Position Paper (1973a), adopted by the Society's House of Delegates June 22, 1973, which states that at career entry, medical technologists are expected to be capable of supervising others and to be accountable for all work performed in the area of supervision. Supervisory responsibilities require the basic evaluation of procedures, equipment, and people and necessitate a knowledge of facts, concepts, skills in techniques and instruments, as well as knowledge of personnel relations and group functions.

To meet the demands for knowledge and skills in the areas of administration and supervision for medical technology

graduates, the American Society of Clinical Pathologists Board of Registry is going to incorporate these content areas into the Medical Technology Registry Examination. Furthermore, budget, personnel, laboratory space, laboratory supplies and inventory, laboratory equipment, records, regulations and safety, and legal matters are to be included on the Registry Examination. An outline published by the American Society of Clinical Pathologists Board of Registry (1975) contains the content guidelines for the areas of administration and supervision. However, a negative aspect of the content of this outline is its indiscriminate attempt to exemplify the simplicity and/or complexity of the questions to be asked on the examination. On the other hand, without this outline the extent of coverage in teaching the laboratory administrative and supervisory functions is not known by medical technology educators. Consequently, the knowledge and skills acquired by a medical technology student in these content areas depends upon the medical technology curriculum of the particular school in which the student is enrolled. A standardization needs to be established in the medical technology curricula within the content areas of administration and supervision in order to resolve this confusion.

Importance of the Study

Increased emphasis on laboratory administration and supervision in medical technology curricula is creating a

need for standardization of expected competencies in these particular areas. However, much expansion of medical technology curricula into these content areas lacks delineation of the administrative and supervisory competencies for which the graduate is to be responsible. Consequently, a major study was needed to:

- Describe medical technology administrative and supervisory tasks in depth.
- Develop a hierarchy of medical technology administrative and supervisory competencies for curriculum development through examination of the administrative and supervisory tasks.

Such a study was directed toward indicating what administrative and supervisory functions the medical technology student would perform and for which the student would be responsible upon career entry. Additionally, the study aimed at the provision of competencies as means to standardize medical technology curricula content in these areas. The importance of defining the medical technology administrative and supervisory tasks for development of competencies has been recognized by the American Society for Medical Technology. Thus, the author has conducted this study in collaboration with the Society and an appropriate agreement was developed and approved by both parties (see Appendix A).

An efficacious method of identifying the administrative and supervisory tasks necessary to obtain competence in

this field is the utilization of task analysis. For example, Light (1970) asserts:

> Task analysis can help to identify what must be learned under formal, organized, instructional arrangements and what may be planned to be acquired on the job. It has the potential of effectively determining how many functions and responsibilities the medical technologist can perform upon graduation (p. 77).

Mager and Beach (1967) additionally points out that task analysis can be used for the systematic development of instruction and the continual improvement of course effectiveness. Gagne, Scriven, and Taylor (1967) also stressed the importance of task analysis as a systematic method for designing a curriculum on the basis of empirical evidence of its feasibility.

In this study, task analysis methodology was utilized to develop a hierarchy of administrative and supervisory competencies. Tasks activities were related to one another in a hierarchy which reflected the learnable knowledge and skills in an ascending sequence. In particular, the instructional importance of these tasks was ranked by laboratory supervisors and administrative technologists so that a hierarchical sequence could be established for teaching purposes.

Finally, the tasks were investigated through the utilization of two factors: frequency and Guilford's cognitive products. Investigating the frequency of performance for each task helped to determine the importance of each task in daily administrative and supervisory work. Guilford's

cognitive products were used to evaluate the knowledge base required to perform each task. Defining the knowledge base requirements helped in establishing the administrative and supervisory competencies. Through the utilization of these factors and the establishment of a hierarchical sequence, it was expected that the assessment of these tasks would provide a basic design for the development of an instructional program in medical technology administration and supervision.

Statement of the Problem

The problem was to determine the administrative and supervisory competencies which a medical technology student should acquire before graduation from a school of medical technology. The study was conducted by investigating the administrative and supervisory tasks and their required knowledge and skills. More specifically, the study attempted to:

1. Design a pilot task survey questionnaire by utilizing the content of medical technology laboratory supervisor job descriptions as a basis.

2. Determine what tasks the medical technology laboratory supervisor actually performs by interviewing and administering the pilot task survey questionnaire to selected medical technology administrators and supervisors in the Houston-Galveston area.

3. Determine what knowledge and skills are needed in order to perform these tasks.

4. Determine each task's instructional ranking, cognitive product rating, and frequency by administering nationwide a questionnaire designed from the pilot survey questionnaire to a random sample of members in the American Society for Medical Technology.

5. Develop the medical technology administrative and supervisory competencies from data analysis and list these competencies in the hierarchical sequence established by the study.

Research Questions and Hypotheses

Focusing on the following research questions and hypotheses permitted the study to accomplish its purposes:

1. In what hierarchical sequence should the medical technology laboratory supervisory tasks be taught? Emanating from this research question was the following null hypothesis to be tested: There is no correlation between the laboratory supervisors' rankings and administrative technologists' rankings on the tasks' teaching importance.
2. What amount of time is devoted to performing each of the medical technology laboratory supervisory tasks? Emanating from this research question was the following null hypothesis to be tested: There is no correlation between the laboratory supervisors' rankings and administrative technologists' rankings for time requirements of tasks' performance.
3. What is the knowledge base requirement for each of these tasks?

Assumptions

It was assumed that the medical technology graduate needed competencies for the laboratory supervisory position.

The tasks were categorized accordingly. The bases for this assumption were:

- The content guidelines prepared by the American Board of Registry (1975) for the areas of administration and supervision,
- The responses from a pilot task survey questionnaire that was administered to selected medical technology administrators and supervisors in the Houston-Galveston area, and
- The career entry medical technology expectations set forth in an American Society for Medical Technology Position Paper (1973a) on the areas of administration and supervision.

It was assumed that the administrative and supervisory tasks could be grouped into a hierarchical sequence of instructional importance by utilizing the Kendall tau coefficient of correlation for reliability between the two sample supervisory groups.

Limitations of the Study

1. The questionnaire designed from the pilot survey questionnaire was sent to four random samples of members in the American Society for Medical Technology. These samples were obtained from the Society's job category listings, and were composed of administrative technologists, laboratory supervisors, education coordinators, and staff technologists. The sampling technique biased the results since some medical

technology administrative technologists, laboratory supervisors, education coordinators, and staff technologists do not belong to the professional organization. However, the educational policies implemented in medical technology schools are developed through the American Society for Medical Technology. Consequently, the study involved the administrative technologists, laboratory supervisors, education coordinators, and staff technologists whose interest in education is evidenced by their membership in their professional organization.

2. The tasks were evaluated through the utilization of Guilford's cognitive products. Factor analysis was considered, but rejected due to the enormous number of responses that would have been required to analyze each task. Furthermore, diminishing the number of factors to only three admittedly limited the scope of the study. However, these cognitive products were chosen for the study due to their hierarchical content and ability to establish the knowledge base requirements for the administrative and supervisory tasks.

Definitions of Terms

American Society for Medical Technology: The professional organization of medical laboratory personnel. Requirements for full membership include certification by the American Society of Clinical Pathologists Board of Registry.

American Society of Clinical Pathologists Board of Registry: The certification board that qualifies personnel as

medical technologists through the utilization of a four-hour comprehensive examination.

Administrative technologist: A medical technologist who is an administrative officer having the second highest level managerial position in the clinical laboratory's chain of command. The pathologist is the highest level administrator in the clinical laboratory's chain of command.

Education coordinator: A medical technologist who develops and coordinates the curriculum for a school of medical technology.

Frequency: The number of hours per week that is devoted to the performance of each task.

Job: A collection of tasks constituting the major work assignment of a category of worker.

Job analysis: The study of a job in terms of worker function, work fields, equipment used, products produced, and required worker traits. This information may also be used for recruitment, placement, better utilization of employees, job restructuring, vocational counseling, performance evaluation, and safety.

Medical (staff) technologist: A person who has completed four years of college which includes not only certain minimum requirements as established by the American Society of Clinical Pathologists Board of Registry but also a year of clinical experience in a medical technology educational program. The person must also have

passed an examination in medical technology given by the American Society of Clinical Pathologists Board of Registry.

Medical technology laboratory supervisor: A medical technologist who is an administrative officer at the lowest level managerial position in the clinical laboratory's chain of command.

Task: A small group of activities comprising a distinct unit of the total job.

Task analysis: The study of the individual tasks comprising a job. These may be studied from the viewpoint of the requirements of the tasks itself to select a suitable individual or from the viewpoint of altering tasks to fit the abilities of given individuals.

Task detailing: A detailed description of a task including the knowledge and skills necessary to perform the task.

CHAPTER II

REVIEW OF THE LITERATURE

The necessity for administrative and supervisory competencies of the medical technology graduates has been set forth in criteria established by an American Society for Medical Technology Position Paper (1973a). In this investigation, task analysis methodology was utilized to establish those administrative and supervisory competencies that the medical technology student should acquire before graduation. Consequently, the literature was reviewed to determine the task analysis technique which would best fit the needs of this study.

Development of Job Evaluation

The development of task analysis has its origin in the industrial studies at Midvale Steel Company by Frederick W. Taylor (1911). Taylor's scientific management originated the "task idea" which entailed the detailed description of the task and the means to be used in performing each task (Taylor, 1911, p. 39). Thompson (1971) points out that Taylor's was the first attempt to analyze and standardize work for effective time utilization. Similar to Taylor's ideas is Fayol's management philosophy (Fayol, 1949). Both implement job evaluation through time and motion

studies for industry. F. B. Gilbreth and L. M. Gilbreth, working independently of Taylor and Fayol, also invented job evaluation techniques for the standardization of motion patterns in industry (Yost, 1949). These job evaluation studies increased in industry and business through the following years.

With the advent of World War I, the demand for more efficient production of output profoundly influenced the utilization of job evaluation techniques (Hunt, 1972). The determination of equitable rates of pay also increased the purposes of job evaluation (Lanham, 1955).

In 1924, Merrill R. Lott introduced methods of formal job evaluation which laid the foundation for future methods (Patton, 1949). The popularity of job evaluation continued to increase during World War II, partly due to the impetus of many new occupations and partly as a means of justifying wage increases subject to the jurisdiction of the War Labor Board (Patton , 1949).

Analysis of Jobs

Job analysis evolved to serve an important function in job evaluation programs. It was created for job rating, selection, training, transfer, and promotion (Otis, 1948). Lanham (1955) defines job analysis as:

> the process of determining, by observation and study, and reporting pertinent information relating to the nature of a specific job. It is the determination of the tasks which comprise the job and of the skills, knowledges, abilities, and responsibilities required of the worker for successful performance and which differentiate the job from all others (p. 124).

Four principal methods of job analysis have been implemented in business and industry (Niebel, 1972). These are:

- The classification method--developed at the Bureau of Personnel Research at Carnegie Institute of Technology (Lanham, 1955). In this procedure, grade levels are defined and each job is studied and assigned to the appropriate level on the basis of the complexity of duties and responsibilities.
- The point system--originally designed and developed by Western Electric (Patton, 1949). All the attributes of a job are compared directly with attributes in other jobs by evaluating certain factors in the job descriptions and assigning points accordingly.
- The factor comparison method--originated by Benge in 1926 (Benge, Burk, & Hay, 1941). It follows the format of having committees rank key jobs under each of several broad factors, appraising the value of each of the same factors as demanded in each of the key jobs, and checking the results of these two processes against each other (Patton, 1949).
- The ranking method--popularized in the United States during World War II because of its simplicity. This procedure is not as systematic as the other three procedures, but it can give dependable job

rankings if the jobs are ranked three or more times with final results averaged (Patton, 1949).

Although job analysis was mainly a development of industry, it has increasingly been applied to other areas, including governmental services (U. S. Department of Labor, 1972).

Task Analysis

A more exact process was eventually extracted from the technique of job analysis. This process examined the specific sub-units or tasks within the job to determine their characteristics or requirements, and it acquired the name of task analysis. As defined by R. B. Miller (Gagne, 1965), "task analysis is a heuristic description of activities at the functional interface of the human operator and the objects and environments with which he interacts" (p. 188).

The originator of task analysis is usually considered to be Robert B. Miller. His Air Force task analysis studies in the 1950's were the first explicit attempt at a classification of behavior for training (Annett & Duncan, 1967). R. B. Miller incorporated this process to implement human engineering principles in the systematic design of effective training curricula (R. B. Miller, 1954). More specifically, R. B. Miller's system of task analysis provided physical and psychological data about human functions, which in turn were used to determine the characteristics of job aids, training

programs, and the assessment of performance of the systems and components (Gagne, 1965). His research alleviated a critical problem for the Air Force in that it reduced the time lag between availability of the equipment and trained personnel to operate and maintain it (Glaser, 1962).

Cotterman, who had worked with R. B. Miller on task analysis designs, saw task analysis as a "task classification scheme" which allowed sorting of human learning tasks (Cotterman, 1959). He designed training programs by classifying behaviors into specific tasks which were to be mastered at the end of the training program. E. E. Miller also utilized task analysis to provide a systematic application of knowledge for Air Force training programs. He incorporated the "task classification scheme" as did Cotterman, but he classified tasks according to the desired change in behavior which practice would produce (E. E. Miller, 1963). The establishment of task analysis as a basic, applicable concept was reinforced by Synder's standardization of reporting and recording task analysis information (Synder, 1960). This guide for presenting task analysis information made it possible for a meaningful comparison of two methods of performing the same tasks, and/or of two systems performing the same functions. For example, Demaree, working in the Air Force psychological research laboratory, devised training equipment planning information through a systematic technique of evaluating other task analysis data (Demaree, 1961).

After the Air Force had implemented task analysis for a number of years, more sophisticated task analysis techniques evolved which led to increasing amounts of human factor information. As a result, the vast amount of data was organized for future task analysis studies by developing a computerized data management system (Reed, 1967). The development of these computer program systems aided both government and industry in the storage and retrieval of task analysis data.

Among the various military task analysis approaches developed in this period was the more refined task characteristic approach created by Wheaton and Farina (1971). Their procedural design included the basic steps of: (a) developing descriptive characteristics of tasks, (b) assessing the reliability of rating scales devised to measure these characteristics, and (c) determining if these characteristics represented correlates of performance. This procedure made it possible to describe tasks in terms of a task characteristic language free of subjective and indirect descriptors which were found in earlier systems.

Task analysis, as a system design, was extended beyond the realm of military service in the sixties. It became a behavioral design concept for human factors specialists in engineering and industry (Meister, 1971). For example, R. B. Miller gained recognition beyond the military for task analysis studies when he published a chapter on task description and analysis in Gagne's Psychological Principles

in System Development (1965). He defined task descriptions as statements of those events which constitute the interactions of men with machines and with their system environments, including other men. Furthermore, he incorporated task analysis as a process concerned with the kinds of abilities, skills, and knowledges that are required in order for a person to carry out specified tasks.

In more recent years, task analysis has been accepted into academia as a valuable tool for curriculum research (Gagne, 1967). It provides a systematic basis on which to make decisions about what a course should contain in the way of content, depth of treatment, selection of procedures, student evaluation, and course improvement (Mager, 1967). Mager has designed a method of task analysis to be applied to curriculum development. It involves the testing and detailing of tasks, establishing the frequency in which each task is performed, and subjectively rating the difficulty of each task.

The Design of Curriculum Guidelines for Educational Ladders Using Task Data was a recent study implementing task analysis for training of allied health personnel (Gilpatrick & Gullion, 1973). The aim of the project was to design upward job mobility for hospital workers through tasks ratings on the skills and knowledge necessary for these jobs. The rating scale was devised from factor analysis of intellectual skills, some of which were devised from the "intellectual model" of Guilford.

Another recent study utilizing task analysis was completed at The Ohio State University (Schoen, 1972). The project developed occupational therapy job descriptions and curricula through task analysis.

At the Kettering Medical Center (Hedrick & Fiene, 1975), task analysis was implemented to determine what levels of responsibility should be assigned to certified laboratory assistants, medical laboratory technicians, and medical technologists. The study also provided data for curriculum development for the three occupational levels of clinical laboratory medicine and provided a means for career mobility between the levels.

Factor Analysis

Different task analysis procedures must be implemented to meet the needs of each specific study. This fact has been illustrated by the evolution of the various procedural formats for task analysis. In order to obtain a hierarchical sequence of the administrative and supervisory tasks for curriculum development, the application of derived factors from factor analysis studies was the most appropriate for the needs of this task analysis study. Consequently, factor analysis literature was investigated to discover the most appropriate methods to be implemented in this project.

The development of factor analysis began in the late nineteenth century when the method of correlation was devised by Galton and Pearson (Vernon, 1950). Some of the first

applications in America of this method to mental functions were made by Wissler and Thorndike in 1901. During this period, the British psychologists, headed by Spearman, also developed correlations of mental abilities (Wolfle, 1940). Spearman devised a general factor, g, which was to show the commonality of all branches of intellectual activity (Vernon, 1950). As research on factor analysis continued, however, group factor theories were developed by Thurstone, Holzinger, Kelley, and others (Wolfle, 1940) that challenged the credibility of Spearman's g factor theory. It was discovered that the general factor was actually a composite of six cognitive factors that could be subdivided even further (Wolfle, 1940).

In 1931, Thurstone (Vernon, 1950) developed the centroid technique of analysis which established multiple-factor analysis. Later, in 1938, Thurstone published the first of his long series of investigations of human abilities which revealed a series of distinct multiple factors. The eight primary factors were identified as: verbal, perceptual, speed, inductive reasoning, number, rote memory, deductive reasoning, word fluency, and space or visualization.

During World War II, extensive use of factor analysis was made by Guilford (1948a) and his collaborators in the United States Air Force. Job analysis studies of human abilities for air-crew personnel involved factorization to discover each distinct measurable ability (Guilford, 1948b). An important outcome from these factor analysis studies was Guilford's

(1956) unified theory of human intellect, which organized known, unique intellectual abilities into a single system called the "structure-of-intellect." The structure-of-intellect model is a model that is represented spatially as a three-dimensional cube (Guilford, 1967). The three dimensions are broken into five, four, and six categories and therefore yield 120 cells, each of which represents a factor.

The first dimension is divided into five operations: cognition, memory, convergent thinking, divergent thinking, and evaluation. The second dimension is divided into four kinds of content: figural, symbolic, semantic, and behavioral. The third dimension is divided into six kinds of products: units, classes, relations, systems, transformations, and implications. A cross between any three categories yields a factor.

Making use of the structure-of-intellect concept, Guilford (1967) has set forth an information-processing model of problem-solving. The model is a preliminary step toward describing the dynamic organization underlying the structure-of-intellect.

The major alternatives to the multiple-factor model of Guilford are the hierarchical models of Burt (1949) and Vernon (1965). These authors prefer factors as principles of classification rather than as basic units. They prefer factor techniques that yield a "g" factor as Spearman had utilized. These hierarchical models lead to a different kind of research

effort than Guilford's multiple-factor model.

A composite of the various factors has been included in Chart 1 to illustrate the array of factors compiled in this factor analysis search.

Related Allied Health Studies

Medical technology and other allied health professions have had an overwhelming combination of technological advances, expansion of occupational areas, development of new programs, and expenditures of considerable federal, state, and local monies (McTernan & Hawkins, 1972). In the seventies, however, the period of rapid expansion and development in these professions appears to be diminishing. With this decrease in growth, there is rising criticism regarding the design of allied health educational programs (Center for Educational Research and Innovation, 1975). This criticism focuses mainly on the curriculum, faculty preparation, teaching methods, and facilities. Additionally, the allied health students are becoming increasingly dissatisfied with the traditional modes of allied health education, and they are demanding greater flexibility and relevance in required learning experiences (Health Resources Administration, 1974).

A number of significant factors have impacted the quality of allied health education. One of these factors is the failure to specifically define the goals of each allied health educational program (World Health Organization, 1973).

CHART 1

FACTOR ANALYSIS CHART

ORIGINATOR	FACTOR(S)
Spearman, C. Burt, C. L. Vernon, P. E.	general factor "g"
Thurstone, L. L. Holzinger, K. J. Kelley, T. L.	group factors: verbal factor, number factor, space factor, memory factor, speed factor, reasoning factor
Thurstone, L. L.	V Verbal N Number P Perceptual Speed M Rote Memory W Word Fluency I Inductive Reasoning D Deductive Reasoning S Space or Visualization
Guilford, J. P.	Operation dimension: cognition, memory, convergent thinking, divergent thinking, evaluation Content dimension: figural, symbolic, semantic, behavioral Product dimension: units, classes, relations, systems, transformations, implications

Defining the components of the program is a difficult phase of planning the educational program, but it is essential for making decisions about the effectiveness of teaching as well as assessing the performance of students. The goals should be developed to respond, not only to a particular allied health educational program, but to the interrelationships of all health care professional programs (Hamburg, 1974). Presently, however, the great bulk of allied health educational programs continue to follow a course that is hospital-based, specialty-oriented, and mono-disciplinary. This situation causes a lack of coordination between the health professions and leads to inefficient health care (Center for Educational Research and Innovation, 1975).

Holland, Knobel, and Parrish (1976) agree about this problem. They state:

> Increased demand for health manpower has imposed considerable strain on the allied health field. With no national health policy or coordinated goals to provide guidance, the education of health professionals, like the system itself, tends to be fragmented and duplicative (p. 48).

Delineation of educational goals can systematize and coordinate the processes through which allied health professionals are trained. Additionally, goal specification can allow for the training of allied health personnel in a more organized, more effective, and less costly manner (Spencer, 1976).

Besides being deficient in educational goal-setting, allied health programs are also deficient in writing behavioral

objectives (Health Resources Administration, 1974). Actually, the development of goals and behavioral objectives complement one another. The educational goals encompass the broad scope of an allied health program from which the more narrowly defined behavioral objectives can be written. Behavioral objectives (also referred to as instructional objectives, educational objectives or competencies) must be written to clearly define the allied health occupation. The instructor must also use these objectives in teaching to assure the students an opportunity to be exposed to or involved in experiences that enable them to gain mastery of the objectives (Alvir, 1974).

To develop the behavioral objectives for an allied health educational program, the designer must constantly consider the goals of the program. One of the main goals to be considered is the production of graduates who can be expected to perform effectively in their specific allied health occupation (Health Resources Administration, 1974). Thus, the designers of allied health curricula need to determine the occupational requirements of their respective allied health professions in order to write the behavioral objectives (World Health Organization, 1973). Essentially, the behaviors for the successful performance of each health care job should be determined. After identification of the required behaviors, task descriptions are prepared that describe the occupational activities. Knowledge and skill specifications are then written for these activities. Once the specification of

knowledge and skills necessary to meet job performance standards, in an allied health occupation, the formulation of behavioral objectives is complete (Hamburg, 1974).

An example of designing behavioral objectives by this method appears in The Design of Curriculum Guidelines for Educational Ladders Using Task Data (Gilpatrick & Gullion, 1973). This paper describes the development of curricula for the professional, technical, and aide level in radiology, nuclear medicine, and ultrasonics through the utilization of behavioral objectives. For these health fields, the study developed a data base through task descriptions which provided behavioral objectives for curriculum guidelines, educational ladders, and performance evaluation instruments. To design the educational ladders, each behavioral objective was scrutinized for its skill and knowledge content.

Another proposed method for the design of behavioral objectives in allied health programs is the critical incident technique (World Health Organization, 1973). This method is similar to the previously discussed method in that both techniques focus upon the behavioral product. In its simplest form, this method merely asks an observer to describe a specific performance of a health professional and judge if the performance is good or bad. As performance descriptions are accumulated from a large number of independent observers the descriptions begin to fall naturally into categories that encompass the full range of specific competencies that a

health professional should possess. A disadvantage of this method is its dependence upon individual observation and judgment. However, the size of the population from which performance descriptions are derived offers some assurance that sampling bias is minimized.

In writing behavioral objectives, the Health Resources Administration (1974) has established three general criteria that these educational instruments should meet:

- Are the behavioral objectives relevant in terms of the knowledge and skills required?
- Do the behavioral objectives account for all required performance outputs?
- Are the behavioral objectives measurable? Is it possible to devise a measurement to determine if the specified competencies are achieved?

Once the behavioral objectives have been written to meet these criteria, they should be classified under three broad headings: (a) cognitive, (b) affective, and (c) psychomotor (McTernan & Hawkins, 1972).

The cognitive objectives should be categorized into a hierarchical taxonomy to form a basis for the allied health curriculum (Bloom, 1956). This hierarchical sequencing has the capacity to enhance motivation and the meaningfulness of material presented to the students.

In the affective domain, a comparable taxonomy should be developed (Krathwohl, 1964). Since there are attitudes

towards patients, towards colleagues, and towards health care delivery that students should learn, it is imperative that attitudinal objectives are explicit and are specified at particular performance levels (World Health Organization, 1973). To illustrate the importance of the affective domain, it has been shown that the attitudinal interaction of the health professional with the patient can have a dynamic effect upon the patient's healing process (Purtilo, 1974). Consequently, the attitudinal and value objectives should be stressed in an allied health program.

Behavioral objectives are important not only for allied health curricular design, but also in the evaluation process of allied health programs. The pressures of limited resources and increasingly complex technology are the impetus for greater efficiency in the educational process of allied health education. Evaluation of an educational program and its subsequent improvement or modification can be accomplished only when the quality of the program is carefully measured (Health Administration Resources, 1974). The most efficient and effective measuring instruments that have been found for the evaluation process are behavioral objectives. These measuring instruments, if properly written, state what graduates should be able to do, under what conditions they can perform, and to what standard of proficiency they can perform.

In the near future, pressures from health manpower legislation will make it mandatory for allied health educational

programs to define their goals and behavioral objectives for evaluation purposes (Roemer, 1974). Through legislation, the development of three main mechanisms for social regulation of health manpower is evolving. These three mechanisms are: (a) licensure--a legal mechanism in which a governmental agency authorizes persons who have met specified minimal standards of competency to engage in a given health profession, (b) certification--a voluntary mechanism in which a nongovernmental agency or association grants recognition to an individual who has met certain predetermined qualifications specified by that agency or association, and (c) accreditation--a voluntary mechanism in which an agency or organization recognizes a program of study or an institution as meeting certain predetermined qualifications or standards (McTernan & Hawkins, 1972). These mechanisms for regulating health manpower have evolved from recommendations set forth by governmental task force projects on health manpower (National Commission on Community Health Services, 1967). Proponents of these mechanisms argue that licensing, certification, and accreditation will insure consistent standards of care, enable practitioners to move without difficulty into areas with demonstrated personnel shortages, and permit existing health professions to expand the scope of their services without resorting to the development of new professional groups (Hamburg, 1974). Furthermore, these credentialing mechanisms will cause health professionals to maintain their

occupational competencies throughout their lifetime.

With respect to maintenance of qualifications, the major responsibility to devise meaningful methods for updating qualifications will fall on educational and health care institutions and on professional associations (Roemer, 1974). Already some professional associations have moved in this direction. For example, in addition to its national meetings, the American Society for Medical Technology offers a variety of workshops at regional levels, providing opportunities for all types of specialties in medical technology. The workshop participants receive Continuing Education Units (American Society for Medical Technology, 1973b). This professional organization also offers self-assessment programs as a means to continuing education.

Besides stimulating continuing education, the credentialing mechanisms will encourage the processes of public audit, peer review, and other professional evaluation mechanisms (Mase, 1975). For instance, these processes will soon become reality for the American Society for Medical Technology. In its national newsletter (1976), it was announced that the Society has received an Allied Health Professions Training Institute Grant from the Department of Health, Education and Welfare funding a program entitled "Professional Standards Review for Allied Health." The focus of the program is the education of allied health personnel in the techniques of patient audit and peer review. Hopefully, these

techniques will lead to the continual improvement and advancement of health manpower.

In conclusion, allied health is passing from a period of exponential growth into a state of dynamic equilibrium. Thus, to be effective and efficient, health care educational programs must design interdisciplinary curricula to insure future coordination of health care needs.

Summary

Task analysis, as an outgrowth of job analysis, has proven as a valuable tool for the implementation of training programs and curriculum design. However, as shown by the variety of task analysis procedures, the task analysis professionals differ as to the best approach to this research technique.

This study required the development of a hierarchical scale of administrative and supervisory tasks for a curriculum ladder. Therefore, a composite of Wheaton and Farina's (1971) task analysis technique, Mager's (1967) task analysis technique and factors derived from Guilford's structure-of-intellect (1967) provided the best task analysis method for this project.

The "task characteristic approach" set forth by Wheaton and Farina was chosen due to its strict objective approach to task analysis. The study treated each task as an independent variable and factorially classified each task

on quantitative rather than on qualitative or subjective grounds. It used factors to classify tasks and chose the factors on the bases of their: (a) applicability to the tasks studied, (b) quantitative measurement being scaled in at least an ordinal fashion, and (c) possession of an acceptable degree of reliability.

Guilford's six cognitive products were applicable for this approach due to their hierarchical content and ability to establish the knowledge base requirements for the tasks. Mager's technique of assessing each task in terms of frequency provided another useful factor that was implemented in the "task characteristic approach" of this study. The inclusion of these methods into the task analysis study on laboratory administration and supervision helped to determine the supervisory functions and responsibilities that the medical technologist should be able to perform upon graduation.

Review of the related allied health studies indicated that goals and competencies have not been developed in many allied health areas. Such development is necessary in order to systematize and coordinate each allied health profession and its respective educational program. The health professions can coordinate their services for more effective and efficient health care only if coordination exists within each of the allied health programs.

Due to legislation, in the near future it will become mandatory for all allied health educational programs to define

their goals and competencies. These procedures will be mandated as a result of state and federal health manpower legislation which has been introduced to correct the weaknesses and inefficiencies in the health care system. The inclusion of competencies in the allied health educational programs will hopefully create coordination and effectiveness of health care services.

CHAPTER III

PROCEDURES AND METHODOLOGY

Instrumentation

Two instruments were used to collect data for this task analysis study. The first instrument used was a pilot task survey questionnaire designed by the author and administered to selected medical technology administrators and supervisors in the Houston-Galveston area. This pilot questionnaire, derived from medical technology laboratory supervisory job descriptions, was utilized to determine what tasks the medical technology laboratory supervisor actually performs. A copy of this questionnaire is found in Appendix B.

The second instrument used in this study was designed by the author in collaboration with the American Society for Medical Technology. A copy of this questionnaire is found in Appendix D. The laboratory supervisory and administrative tasks listed in this questionnaire were compiled primarily from the responses obtained on the pilot task survey questionnaire. Included in the questionnaire were the clinical laboratory supervisory and administrative tasks which might be performed by a medical technology laboratory supervisor. The survey form also requested responses which would rank: (a) the teaching importance of these supervisory tasks, and

(b) the frequency of the performance of supervisory tasks. A section was also included to rate the supervisory tasks according to three of Guilford's cognitive products. Data on educational background, working experience, and other demographic characteristics were included in the questionnaire as well.

Population and Sampling Technique

The data were collected for the pilot task survey questionnaire by delivering the instrument to selected medical technology supervisors and administrators at their place of employment in the Houston-Galveston area. An explanation of the purpose of the questionnaire was given as well as an opportunity to ask any questions. At the end of approximately two weeks, these questionnaires were collected. If the questionnaires had not been completed, the supervisors and/or administrators were telephoned to request the completion and return of the questionnaire.

There were a total of 20 pilot task survey questionnaires administered. Seventeen completed questionnaires were returned. The completed questionnaires were perused to determine which tasks should be included on the second instrument. It was then determined that 40 tasks from the pilot task survey questionnaire would serve as the bases for the second instrument.

The second instrument used in this study, the Clinical Laboratory Supervision Survey, was the major instrument from

which the data analysis was performed. This instrument was sent nationwide in two mailings to four random samples of members in the American Society for Medical Technology. These samples were obtained from the Society's job category listings. They were composed of 442 practicing administrative technologists, 214 practicing laboratory supervisors, 217 practicing education coordinators, and 402 practicing staff technologists that had been randomly selected within their respective job category listings according to zip code numbers. Based upon the response rates of past surveys conducted by the American Society for Medical Technology, it was anticipated that 40% of those receiving the Clinical Laboratory Supervision Survey would respond.

A premailing of the questionnaire was conducted to determine: (a) the percentage of respondents, and (b) how well the questions were understood and answered. This premailing was sent nationwide to a random sample of 34 practicing administrative technologists, a random sample of 13 practicing laboratory supervisors, a random sample of 23 practicing education coordinators, and a random sample of 34 practicing staff technologists.

From examination of the premailing responses it was determined that minor changes seemed appropriate in the directions to be followed by respondents. Modifications were made to the directions; however, the final instrument was essentially the same (see Appendices C and D). After these changes

were made, the second mailing of the questionnaire was sent nationwide to a random sample of 408 practicing administrative technologists, a random sample of 201 practicing laboratory supervisors, a random sample of 194 practicing education coordinators, and a random sample of 368 practicing staff technologists.

Data Collection

Stamped, addressed envelopes were provided to the survey population along with the Clinical Laboratory Supervision Survey. Each person receiving the questionnaire also received a cover letter signed by the President of the American Society for Medical Technology (see Appendices C and D). The cover letter was provided to: (a) explain the importance of completing and returning the questionnaire, and (b) assure anonymity for the respondents.

Data from the premailing were collected during the last two weeks of October. A total of 49 questionnaires (46%) were returned from this premailing.

Data from the second mailing were collected in a five-week period that began in November and ended in December. Three weeks after the second mailing, 37% of the questionnaires had been returned. Thus, a follow-up postcard (see Appendix E) was sent to remind the administrative technologists and laboratory supervisors to return the questionnaire if they had not done so.

The survey instruments sent out during the premailing and the second mailing instruments were essentially the same; therefore, responses from both instruments were included in the final data analysis. Counting both mailings, a total of 565 questionnaires (44%) were returned within a seven-week period, a percentage which was higher than anticipated. The final sample population consisted of:

- 113 staff technologists
- 151 administrative technologists
- 163 laboratory supervisors
- 114 education coordinators
- 24 other

Some members had changed job categories without notifying the American Society for Medical Technology. As a result, the sample population for this study included subjects in the "other" job category. Most subjects in this category wrote their job titles in the blank provided on question five of the questionnaire. They indicated jobs such as technical sales and service educator, professor, in-service coordinator, instructor, and managerial technical sales representative.

Statistical Procedures

All data were coded and punched on computer cards. Respondents were grouped according to their job categories, i.e., staff technologists, administrative technologists, laboratory supervisors, education coordinators, and other. For

each group and the total sample population frequencies and percentages were computed on Sections I and V for classification typologies. For data collected from the laboratory supervisors and administrative technologists, medians were computed on the rankings in Sections II and IV of the questionnaire. These medians were then utilized to compute Kendall's tau which measured the correlation between the two supervisory groups of rankings of the tasks. Since ties occurred in the rankings from the laboratory supervisors and administrative technologists, the following formula was applied (Ferguson, 1966):

$$\text{tau} = \frac{P - Q}{\sqrt{[n(n-1)/2]-K_x}\ \sqrt{[n(n-1)/2]-K_y}}$$

For Section II of the questionnaire, cross-classification tables were produced. The responses for each task were cross-tabulated with the job categories of the respondents to give 40 contingency tables. In Chapter IV, the findings of the study are presented.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF FINDINGS

The purpose of this chapter is to present data collected from the Clinical Laboratory Supervision Survey. These data have been examined for their potential use in developing competencies for a medical technology administration and supervision curriculum.

The survey instrument used in this study was designed by the author in collaboration with the American Society for Medical Technology. It was divided into five sections to facilitate data presentation and interpretation. The data were classified according to the job categories of the respondents, i.e., staff technologist, laboratory supervisor, administrative technologist, education coordinator, and other. The total number of respondents for this questionnaire was 565. However, because some respondents did not complete certain items on the survey instrument, the total count of responses for each item varied.

Demographic Characteristics of the Respondents

Section I of the questionnaire consisted of general background information. Questions were included to identify the respondents' places of employment, highest level of formal education, length of service in medical technology, number of

clinical laboratory personnel supervised, and educational programs at the respondents' places of employment.

Place of Employment

Presented in Table 1 are the demographic characteristics for place of employment among the five job categories. Of the respondents in the five job categories, 50% work in private hospitals, while a state, county, or city laboratory is the second most frequent place of employment among these respondents. Less than 1% of the total respondents reported their place of employment as federal-military and no laboratory supervisors or education coordinators participating in this survey work in a federal-military place of employment.

The respondents who selected "other" specified their places of employment in the blank provided. These "other" places included: state university, community college, veterinary clinic, corporation, medical school, dialysis center, and technical institute.

Table 2 shows the distribution of the five job categories with respect to hospital size. For the staff technologists, laboratory supervisors, administrative technologists, and education coordinators, the hospital sizes of 100-299 beds and 300-500 beds were most frequently selected by these respondents as their job environment. The education coordinators indicated they are employed in hospitals with greater than 99 beds. For 26% of the total respondents, however, the

Table 1

Response Distribution by Place of Employment

Place of Employment	Staff Technologist		Lab Supervisor		Administrative Technologist		Education Coordinator		Other		Total	
	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*
federal-military	1	0.9	-	-	3	2.1	-	-	-	-	4	0.8
federal-nonmilitary	8	7.1	5	3.1	1	.7	3	3.2	-	-	17	3.3
state, county, or city lab.	29	25.7	30	18.4	38	27.0	15	17.0	1	14.3	113	21.8
private hospital	53	46.9	88	54.0	64	45.4	53	56.4	1	14.3	259	50.0
private independent lab.	9	8.0	19	11.7	15	10.7	-	-	1	14.3	44	8.5
group practice or clinic	8	7.0	13	8.0	10	7.1	1	1.1	-	-	32	6.2
other	5	4.4	8	4.9	9	7.0	20	22.3	4	57.1	46	9.4
Total	113	100.0	163	100.0	140	100.0	92	100.0	7	100.0	515	100.0

*Percentages represent the distribution within each job category, and are based on the total number of respondents within each of these categories.

Table 2

Response Distribution by Hospital Size

Hospital Size	Staff Technologist		Lab Supervisor		Administrative Technologist		Education Coordinator		Other		Total	
	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*
1-99 beds	11	9.7	12	7.4	23	16.3	-	-	-	-	46	8.9
100-299 beds	34	30.1	43	26.4	50	35.5	18	20.1	1	14.3	146	28.2
300-500 beds	31	27.4	43	26.4	26	18.4	37	39.5	-	-	137	26.4
more than 500 beds	15	13.3	33	20.2	11	7.8	19	20.2	-	-	78	15.1
does not apply	22	19.5	31	19.6	31	22.0	19	20.2	6	85.7	109	21.4
Total	113	100.0	162	100.0	141	100.0	93	100.0	7	100.0	516	100.0

*Percentages represent the distribution within each job category, and are based on the total number of respondents within each of these categories.

question on hospital size was not applicable to their job environment.

Educational Qualifications

Presented in Table 3 are data concerning the educational qualifications of the respondents in the five job categories. Respondents selected one of four possible choices of "highest level of formal education attained." The baccalaureate degree was the most frequent response (76.1%). Of education coordinators, 31.9% have earned a Master's degree. In comparison to the low percentage (1.8%) of staff technologists holding an Associate degree, laboratory supervisors (8.0%) and administrative technologists (9.2%) reported they hold an Associate degree. These data were unexpected because the laboratory supervisor's position and administrative technologist's position are ranked hierarchically above the staff technologist's position in the clinical laboratory's chain of command. Thus, it would be expected that these two supervisory groups would have educational levels higher than the staff technologists' educational level rather than the resultant lower level.

The respondents who chose "other" for their educational level usually specified that they had earned academic hours toward a degree.

Table 3

Highest Level of Formal Education of the Five Job Categories

Education Level	Staff Technologist		Lab Supervisor		Administrative Technologist		Education Coordinator		Other		Total	
	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*
Associate	2	1.8	13	8.0	13	9.2	-	-	1	14.3	29	5.6
Baccalaureate	104	92.0	125	76.7	98	69.5	62	66.0	5	71.4	394	76.1
Master's	3	2.7	17	10.4	19	13.5	30	31.9	-	-	69	13.4
Other	4	3.5	8	4.9	11	7.8	2	2.1	1	14.3	26	4.9
Total	113	100.0	163	100.0	141	100.0	94	100.0	7	100.0	518	100.0

*Percentages represent the distribution within each job category, and are based on the total number of respondents within each of these categories.

Employment Characteristics

Tables 4 and 5 illustrate employment characteristics of the workers surveyed. For example, Table 4 shows the length of time of employment in medical technology. For the laboratory supervisors, administrative technologists, and education coordinators, over 55% of these respondents have worked in medical technology more than ten years. Of all five job categories, the administrative technologists have the highest percentage (76.5%) of personnel who have served in medical technology for more than ten years.

The staff technologists have been employed for a shorter period of time than the respondents in the other job categories. For example, only 23% of the staff technologists have worked in medical technology more than ten years. Of the staff technologists participating, 47% in the study have worked in medical technology for one to three years. The only respondents indicating they have worked less than one year in medical technology were staff technologists.

Presented in Table 5 are data concerning the number of clinical laboratory personnel supervised by the respondents in the five job categories. As would be expected, the administrative technologists more frequently (46.8%) indicated they have 20 or more persons under their supervision. For the staff technologists and laboratory supervisors, over 40% indicated they have one to four person(s) under their supervision. Supervision of one to four persons accounted for the highest

Table 4

Length of Employment in Medical Technology

for the Five Job Categories

Length of Employment	Staff Technologist		Lab Supervisor		Administrative Technologist		Education Coordinator		Other		Total	
	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*
less than 1 year	2	1.8	-	-	-	-	-	-	-	-	2	0.4
1 - 3 years	53	47.0	19	11.7	7	5.0	3	3.2	-	-	82	15.8
4 - 5 years	16	14.1	19	11.7	8	5.7	11	11.7	1	14.3	55	10.6
6 - 10 years	16	14.1	34	20.8	18	12.8	21	22.3	2	28.6	91	17.6
more than 10 years	26	23.0	91	55.8	108	76.5	59	62.8	4	57.1	288	55.6
Total	113	100.0	163	100.0	141	100.0	94	100.0	7	100.0	518	100.0

*Percentages represent the distribution within each job category, and are based on the total number of respondents within each of these categories.

Table 5

Number of Clinical Laboratory Personnel

Under Supervision of Respondents

Supervision	Staff Technologist		Lab Supervisor		Administrative Technologist		Education Coordinator		Other		Total	
	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*
1 - 4 person(s)	51	45.1	67	41.1	20	14.2	22	23.4	2	28.5	162	31.3
5 - 9 persons	4	3.5	39	23.9	31	22.0	24	25.5	1	14.3	99	19.1
10 - 19 persons	1	.9	34	20.9	22	15.6	25	26.6	1	14.3	83	16.0
20 or more persons	-	-	19	11.7	66	46.8	9	9.6	1	14.3	95	18.3
no response	57	50.5	4	2.4	2	1.4	14	14.9	2	28.5	79	15.3
Total	113	100.0	163	100.0	141	100.0	94	100.0	7	100.0	518	100.0

*Percentages represent the distribution within each job category, and are based on the total number of respondents within each of these categories.

percentage (31.3%) of the total respondents.

Respondents were not given the option to state they were not supervising personnel. Consequently, if they did not answer this question, it has been assumed that they had no personnel under their supervision. Of the six laboratory supervisors and administrative technologists who did not complete this item, three wrote a note explaining that they did not answer this question because they were currently unemployed. However, these three also explained that they were answering the other questions in reference to their past experiences in the clinical laboratory.

Table 6 presents data concerning the type of educational program at the respondents' places of employment. As expected, the education coordinator category contained the highest percentage (56.3%) of respondents employed in hospitals with accredited medical laboratory technician (MLT) or medical technology (MT) educational programs. The "other" job category had no respondents employed in hospitals with accredited MLT or MT educational programs.

Of the total number of respondents answering this question, 57.1% indicated their places of employment have accredited MLT or MT educational programs. The total number of respondents stating they have no accredited program (42.9%) included those who have: (a) a MLT or MT educational program which is unaccredited, and (b) no MLT or MT educational program.

Table 6

The Type of Educational Program at Respondents' Places of Employment

Educational Programs	Staff Technologist		Lab Supervisor		Administrative Technologist		Education Coordinator		Other		Total	
	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*	No.	Pct.*
accredited hospital-based program	26	23.0	54	33.2	25	17.7	53	56.3	-	-	158	30.5
accredited college-based program	35	31.0	48	29.4	24	17.0	29	30.9	2	28.6	138	26.6
no accredited program	52	46.0	61	37.4	92	65.3	12	12.8	5	71.4	222	42.9
Total	113	100.0	163	100.0	141	100.0	94	100.0	7	100.0	518	100.0

*Percentages represent the distribution within each job category, and are based on the total number of respondents within each of these categories.

Summary of Demographic Characteristics

Respondents' places of employment are primarily distributed among five of the seven major categories of places of employment. The highest percentage of respondents are employed in private hospitals, and over one-half of the respondents work in hospitals that have 100 to 500 beds. The baccalaureate degree is the most frequent "highest educational level attained" (76.1%), with an average of 13.4% having earned a Master's degree. Of the total respondents, 55.6% have served in medical technology for more than ten years. Also, 84.7% of the total respondents have personnel under their supervision. There is an accredited MT or MLT educational program at 57.1% of the respondents' places of employment.

Performance of Supervisory Tasks

Section II of the questionnaire contained 40 clinical laboratory supervisory tasks. For each task, the respondents were asked to indicate according to a number code the job position of the individual who actually performs the task in their places of employment. The tasks listed on the questionnaire ranged from who "determines academic, experience and personal qualifications" to who "represents the laboratory in interdepartmental procedures and policy matters." The 40 supervisory tasks were categorized according to their similarities, and six categories resulted. These categories were:

Personnel Relations (tasks 1-8), Direct Supervision (tasks 9-14), Monitoring (tasks 15-22), General Operations (tasks 23-30), Education (tasks 31-36), and Communications (tasks 37-40).

Six job positions were available as choices for responses. These six choices were number coded in the following manner: (1) staff technologist, (2) supervisor technologist, (3) administrative technologist, (4) education coordinator, (5) laboratory director-pathologist, (6) laboratory technician. Since the six job positions were not necessarily all inclusive for performance of the supervisory tasks, the respondents had the option to write job positions in the blanks provided. From perusal of the returned questionnaires, it was found that supervisory tasks were performed jointly in many places of employment. Additionally, some respondents stated that certain tasks were not applicable to their job situation. Consequently, four additional categories were created and coded to incorporate these responses. The following codes were added: (7) a joint function of the laboratory supervisor with any other job position except the laboratory director-pathologist, (8) a joint function of the laboratory director-pathologist with any other job position, (9) a joint function of any job position excluding the laboratory supervisor and laboratory director-pathologist, and (10) a task indicated as not applicable. If a respondent indicated a task was performed jointly by the

laboratory supervisor and the laboratory director-pathologist, then the laboratory director-pathologist job position had precedence and the task was coded as (8).

Some respondents did not give responses on certain tasks in Section II probably because those tasks were not applicable to their job situation. Thus, on the tables presenting this data, the total row counts vary. Furthermore, the "other" job category was not included in these tables since there were only four "other" job category respondents answering Section II of the questionnaire.

Personnel Relations
Tasks

There were eight tasks listed under the personnel relations heading. For six of these tasks, over 40% of the total respondents selected the administrative technologist as the tasks' performer. As Table 7 indicates, the laboratory supervisor was chosen less than the administrative technologist as the actual tasks' performer except for the "evaluates employee capabilities and performance" task. For this particular task, the number of respondents (38%) choosing the laboratory supervisor as the performer was almost equal to the number of respondents (36%) choosing the administrative technologist as the performer.

Since the laboratory technicians hold the lowest position in the clinical laboratory's chain of command, it was no surprise that this job position was not shown as a personnel

Table 7

Performers of Personnel Relations Tasks in the Clinical Laboratory

Total Respondents' Selection

Personnel Relations Tasks	Total Respondents' Selection of Tasks' Performers[a]										
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
determines academic, experience, and personal qualifications	-	36	252	13	78	-	17	49	26	15	486
	-	(7%)	(52%)	(3%)	(16%)	-	(4%)	(10%)	(5%)	(3%)	(100%)
interviews prospective employees	-	54	244	4	35	-	52	72	16	15	492
	-	(11%)	(50%)	(1%)	(7%)	-	(10%)	(15%)	(3%)	(3%)	(100%)
selects prospective employees	1	49	216	1	66	-	40	87	18	15	492
	(<1%)	(10%)	(44%)	(<1%)	(13%)	-	(8%)	(18%)	(3%)	(3%)	(100%)
evaluates employee capabilities and performance	1	171	176	1	15	-	73	32	8	15	492
	(<1%)	(35%)	(36%)	(<1%)	(3%)	-	(15%)	(5%)	(2%)	(3%)	(100%)
recommends employee transfers and discipline	-	120	212	1	31	-	62	36	9	17	488
	-	(25%)	(43%)	(<1%)	(6%)	-	(13%)	(7%)	(2%)	(3%)	(100%)
recommends discharge of employees	1	94	208	2	48	-	51	59	10	15	488
	(<1%)	(19%)	(43%)	(<1%)	(10%)	-	(10%)	(12%)	(2%)	(3%)	(100%)
recommends hiring additional staff	1	83	211	1	50	-	49	72	10	15	492
	(<1%)	(17%)	(43%)	(<1%)	(10%)	-	(10%)	(14%)	(2%)	(3%)	(100%)
determines which employees are promoted to new positions	2	42	181	1	94	-	38	100	10	18	486
	(<1%)	(9%)	(37%)	(<1%)	(19%)	-	(8%)	(20%)	(2%)	(4%)	(100%)

[a] Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

relation tasks' performer. The staff technologist's position is not classified as a supervisory position; thus, it was expected that the staff technologist would not be chosen as a personnel relations tasks' performer. The data indicate that for three of these supervisory tasks, the staff technologist is not a performer. For the other five personnel relations tasks, only one respondent chose the staff technologist as the tasks' performer.

Tables 8 and 9 represent data on the personnel relations tasks from the laboratory supervisor respondents and the administrative technologist respondents. The laboratory supervisors chose their own job category as the tasks' performer more frequently than the other job category respondents. Also, the administrative technologists chose their own job category as the tasks' performer more frequently than the respondents in other job categories. Over 62% of the administrative technologist respondents selected the administrative technologist as the performer of these eight tasks. For the task which involves determination of "academic, experience and personal qualifications" and the task which "recommends hiring additional staff," 74% of the administrative technologist respondents selected the administrative technologist as the tasks' performer.

Presented in Tables 10 and 11 are data concerning the responses from the education coordinators and staff technologists about the personnel relations tasks' performers. The

Performers of Personnel Relations Tasks in the Clinical Laboratory

Laboratory Supervisors' Selection

Personnel Relations Tasks	Laboratory Supervisors' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab. Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
determines academic, experience, and personal qualifications	-	19 (12%)	70 (45%)	3 (2%)	37 (23%)	-	6 (4%)	17 (11%)	4 (2%)	1 (1%)	157 (100%)
interviews prospective employees	-	32 (20%)	63 (40%)	1 (1%)	15 (9%)	-	24 (15%)	22 (13%)	1 (1%)	1 (1%)	159 (100%)
selects prospective employees	-	25 (16%)	56 (35%)	1 (1%)	29 (18%)	-	16 (10%)	28 (17%)	3 (2%)	1 (1%)	159 (100%)
evaluates employee capabilities and performance	-	83 (52%)	29 (18%)	1 (1%)	4 (2%)	-	29 (18%)	11 (7%)	1 (1%)	1 (1%)	157 (100%)
recommends employee transfers and discipline	-	64 (41%)	33 (21%)	1 (1%)	13 (8%)	-	29 (18%)	14 (9%)	1 (1%)	2 (1%)	157 (100%)
recommends discharge of employees	-	52 (33%)	43 (27%)	1 (1%)	19 (12%)	-	22 (14%)	18 (11%)	1 (1%)	1 (1%)	157 (100%)
recommends hiring additional staff	-	46 (29%)	47 (29%)	-	19 (12%)	-	22 (13%)	24 (15%)	1 (1%)	1 (1%)	160 (100%)
determines which employees are promoted to new positions	2 (1%)	23 (15%)	39 (25%)	-	38 (24%)	-	14 (9%)	38 (24%)	2 (1%)	2 (1%)	158 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Performers of Personnel Relations Tasks in the Clinical Laboratory

Administrative Technologists' Selection

Personnel Relations Tasks	Administrative Technologists' Selection of Tasks' Performers[a]										Total Row Count
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
determines academic, experience, and personal qualifications	-	1	101	1	15	-	2	11	5	-	136
	-	(1%)	(74%)	(1%)	(11%)	-	(1%)	(8%)	(4%)	-	(100%)
interviews prospective employees	-	2	100	-	5	-	11	16	4	-	138
	-	(1%)	(72%)	-	(4%)	-	(8%)	(12%)	(3%)	-	(100%)
selects prospective employees	1	3	92	-	9	-	8	20	5	-	138
	(1%)	(2%)	(67%)	-	(6%)	-	(6%)	(14%)	(4%)	-	(100%)
evaluates employee capabilities and performance	-	16	89	-	2	-	22	8	2	-	137
	-	(12%)	(64%)	-	(1%)	-	(16%)	(6%)	(1%)	-	(100%)
recommends employee transfers and discipline	-	10	98	-	5	-	12	9	2	1	137
	-	(7%)	(72%)	-	(4%)	-	(9%)	(6%)	(1%)	(1%)	(100%)
recommends discharge of employees	1	5	96	-	7	-	7	17	4	-	137
	(1%)	(4%)	(70%)	-	(5%)		(5%)	(12%)	(3%)	-	(100%)
recommends hiring additional staff	-	4	101	-	6	-	7	16	3	-	137
	-	(3%)	(74%)	-	(4%)	-	(5%)	(12%)	(2%)	-	(100%)
determines which employees are promoted to new positions	-	-	84	-	15	-	7	25	3	1	135
	-	-	(62%)	-	(11%)	-	(5%)	(19%)	(2%)	(1%)	(100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 10

Performers of Personnel Relations Tasks in the Clinical Laboratory

Education Coordinators' Selection

Personnel Relations Tasks	Education Coordinators' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
determines academic, experience, and personal qualifications	-	3	34	6	13	-	5	11	7	10	89
	-	(3%)	(38%)	(7%)	(15%)	-	(6%)	(12%)	(8%)	(11%)	(100%)
interviews prospective employees	-	6	35	3	5	-	7	19	5	10	90
	-	(7%)	(39%)	(3%)	(6%)	-	(8%)	(21%)	(5%)	(11%)	(100%)
selects prospective employees	-	6	30	-	13	-	8	20	3	10	90
	-	(7%)	(33%)	-	(15%)	-	(9%)	(22%)	(3%)	(11%)	(100%)
evaluates employee capabilities and performance	1	34	18	-	4	-	13	7	3	10	90
	(1%)	(38%)	(20%)	-	(4%)	-	(15%)	(8%)	(3%)	(11%)	(100%)
recommends employee transfers and discipline	-	18	31	-	8	-	14	6	3	10	90
	-	(20%)	(34%)	-	(9%)	-	(16%)	(7%)	(3%)	(11%)	(100%)
recommends discharge of employees	-	14	29	1	10	-	13	11	2	10	90
	-	(16%)	(32%)	(1%)	(11%)	-	(15%)	(12%)	(2%)	(11%)	(100%)
recommends hiring additional staff	-	8	23	1	13	-	11	22	2	10	90
	-	(9%)	(26%)	(1%)	(15%)	-	(12%)	(24%)	(2%)	(11%)	(100%)
determines which employees are promoted to new positions	-	7	21	1	19	-	7	24	1	10	90
	-	(8%)	(23%)	(1%)	(21%)	-	(8%)	(27%)	(1%)	(11%)	(100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 11

Performers of Personnel Relations Tasks in the Clinical Laboratory
Staff Technologists' Selection

Personnel Relations Tasks	Staff Technologists' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
determines academic, experience, and personal qualifications	-	13	46	3	13	-	4	10	8	2	99
	-	(13%)	(47%)	(3%)	(13%)	-	(4%)	(10%)	(8%)	(2%)	(100%)
interviews prospective employees	-	14	44	-	10	-	10	15	5	2	100
	-	(14%)	(44%)	-	(10%)	-	(10%)	(15%)	(5%)	(2%)	(100%)
selects prospective employees	-	14	36	-	15	-	8	18	7	2	100
	-	(14%)	(36%)	-	(15%)	-	(8%)	(18%)	(7%)	(2%)	(100%)
evaluates employee capabilities and performance	-	37	39	-	5	-	8	6	2	2	99
	-	(37%)	(40%)	-	(5%)	-	(8%)	(6%)	(2%)	(2%)	(100%)
recommends employee transfers and discipline	-	28	49	-	4	-	6	7	3	2	99
	-	(28%)	(50%)	-	(4%)	-	(6%)	(7%)	(3%)	(2%)	(100%)
recommends discharge of employees	-	23	39	-	11	-	8	13	3	2	99
	-	(23%)	(40%)	-	(11%)	-	(8%)	(13%)	(3%)	(2%)	(100%)
recommends hiring additional staff	1	25	38	-	11	-	9	10	4	2	100
	(1%)	(25%)	(38%)	-	(11%)	-	(9%)	(10%)	(4%)	(2%)	(100%)
determines which employees are promoted to new positions	-	12	36	-	21	-	9	13	4	3	98
	-	(12%)	(37%)	-	(22%)	-	(9%)	(13%)	(4%)	(3%)	(100%)

[a] Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

education coordinator respondents and staff technologist respondents were more inclined to choose the administrative technologist rather than the laboratory supervisor as the personnel relations tasks' performer. However, some staff technologist respondents and education coordinator respondents considered the laboratory supervisor as the performer of these tasks. The education coordinator respondents selected the joint function of "laboratory director-pathologist and others" as the tasks' performers more frequently than respondents in the other job categories.

Direct Supervision Tasks

Table 12 presents data concerning the tasks' performers of the six direct supervision tasks. For five of the six direct supervision tasks, over 40% of the total respondents selected the laboratory supervisor as the tasks' performer. The administrative technologist was chosen less frequently than the laboratory supervisor as the direct supervision tasks' performer. For two of these tasks, the administrative technologist was selected as the tasks' performer by less than 10% of the total respondents. These two tasks were described as "trains new employees in laboratory procedures" and "gives instruction on a daily basis."

Data from this table also indicate the staff technologist is performing these supervisory tasks in some clinical laboratories. The direct supervision tasks frequently

Table 12

Performers of Direct Supervision Tasks in the Clinical Laboratory
Total Respondents' Selection

Direct Supervision Tasks	Total Respondents' Selection of Tasks' Performers[a]										
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
trains new employees in laboratory procedures	106 (22%)	181 (37%)	37 (7%)	4 (1%)	1 (<1%)	5 (1%)	133 (27%)	2 (<1%)	11 (2%)	14 (3%)	495 (100%)
gives instruction on a daily basis	82 (17%)	197 (41%)	42 (9%)	20 (4%)	- -	7 (1%)	99 (21%)	1 (<1%)	11 (2%)	17 (4%)	476 (100%)
trains employees on new equipment and procedures	53 (11%)	218 (44%)	57 (11%)	3 (<1%)	- -	6 (1%)	132 (27%)	3 (1%)	8 (2%)	14 (3%)	495 (100%)
observes employee's performance of procedures	31 (6%)	288 (58%)	65 (13%)	1 (<1%)	3 (1%)	2 (<1%)	76 (15%)	4 (1%)	8 (2%)	14 (3%)	492 (100%)
organizes and institutes flow patterns of work	22 (4%)	268 (54%)	102 (21%)	1 (<1%)	3 (1%)	3 (1%)	67 (14%)	7 (1%)	5 (1%)	14 (3%)	492 (100%)
prepares daily work schedule	18 (4%)	265 (54%)	123 (25%)	- -	2 (<1%)	6 (1%)	51 (10%)	4 (1%)	5 (1%)	18 (4%)	492 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

performed by the staff technologist are the two tasks that the administrative technologist was shown to perform infrequently.

The laboratory technician also was shown to be direct supervision tasks' performer. Though only 1% of the total respondents selected the laboratory technician as the tasks' performer, this percentage was higher than the percentage of total respondents selecting the laboratory director-pathologist as the direct supervision tasks' performer.

The frequencies and percentages for laboratory supervisors, administrative technologists, education coordinators, and staff technologists who selected the various job positions as the direct supervision tasks' performers are presented in Appendix F.

Monitoring Tasks

As indicated in Table 13, there were eight supervisory tasks categorized as monitoring tasks. For seven of these tasks, the total group of respondents more frequently chose the laboratory supervisor than the other job positions as the tasks' performer. The data also indicated that the laboratory supervisor performs these tasks with others in the clinical laboratory.

Of the total respondents, 45% chose the administrative technologist as the task performer who "insures safety program is in compliance with governmental standards." The data also indicated that the staff technologist and laboratory technician perform all eight monitoring tasks. For the

Table 13

Performers of Monitoring Tasks in the Clinical Laboratory

Total Respondents' Selection

Monitoring Tasks	Total Respondents' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
reviews and monitors laboratory results for accuracy	35 (7%)	197 (40%)	65 (13%)	- -	18 (4%)	4 (1%)	80 (16%)	69 (14%)	9 (2%)	16 (3%)	493 (100%)
reviews and monitors laboratory results for abnormalities	46 (9%)	166 (34%)	63 (13%)	- -	31 (6%)	4 (1%)	75 (15%)	82 (17%)	11 (2%)	15 (3%)	493 (100%)
monitors adherence to established laboratory procedures	26 (5%)	231 (47%)	99 (20%)	1 (<1%)	10 (2%)	3 (1%)	67 (14%)	34 (7%)	4 (1%)	14 (3%)	489 (100%)
monitors specimen collection, transport and storage	88 (18%)	167 (34%)	67 (14%)	- -	5 (1%)	18 (4%)	93 (19%)	11 (2%)	17 (4%)	18 (4%)	484 (100%)
reviews and revises written procedure manual	18 (4%)	182 (37%)	94 (19%)	3 (<1%)	19 (4%)	1 (<1%)	77 (16%)	74 (15%)	10 (2%)	14 (3%)	492 (100%)
reviews and approves new laboratory methods	5 (1%)	97 (20%)	84 (17%)	2 (<1%)	100 (20%)	2 (<1%)	49 (10%)	129 (26%)	10 (2%)	14 (3%)	492 (100%)
reviews and monitors quality control program	23 (5%)	164 (33%)	85 (17%)	5 (1%)	20 (4%)	2 (<1%)	69 (14%)	97 (20%)	11 (2%)	14 (3%)	490 (100%)
ensures safety program is in compliance with government laws	11 (2%)	77 (16%)	220 (45%)	6 (1%)	24 (5%)	3 (1%)	47 (10%)	65 (13%)	17 (4%)	15 (3%)	485 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

"reviews and approves new laboratory methods" task and "reviews and monitors quality control program" task, over 20% of the total respondents selected the tasks' performers as those who held the joint function of the "laboratory director-pathologist and others." This selection was expected since development of laboratory methods and quality control programs requires input from different job categories.

Tables 14 through 17 present the monitoring tasks' performers according to the laboratory supervisor respondents, administrative technologist respondents, education coordinator respondents, and staff technologist respondents. Comparing responses from each job category, the education coordinator respondents and laboratory supervisor respondents had data that were closer in agreement than data from the other job categories. Respondents from these two job categories selected the laboratory supervisor as the most frequent performer of the monitoring tasks. The similarities in the results seems justifiable since many education coordinators also hold laboratory supervisory positions in the clinical laboratory.

General Operations
Tasks

Table 18 presents the eight general operations tasks. These tasks involved mainly purchasing and maintaining supplies and equipment for the clinical laboratory. For the "prepares and administers (section) budget" task, 48% of the total respondents chose the administrative technologist as the tasks'

Performers of Monitoring Tasks in the Clinical Laboratory

Laboratory Supervisors' Selection

Monitoring Tasks	Laboratory Supervisors' Selection of Tasks' Performers[a]										Total Row Count
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab. Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
reviews and monitors laboratory results for accuracy	3 (2%)	94 (58%)	5 (3%)	- -	3 (2%)	2 (1%)	31 (19%)	23 (14%)	1 (1%)	- -	162 (100%)
reviews and monitors laboratory results for abnormalities	7 (4%)	77 (48%)	8 (5%)	- -	10 (6%)	3 (2%)	27 (17%)	28 (17%)	2 (1%)	- -	162 (100%)
monitors adherence to established laboratory procedures	1 (1%)	106 (67%)	11 (7%)	- -	2 (1%)	2 (1%)	28 (14%)	13 (8%)	1 (1%)	- -	159 (100%)
monitors specimen collection, transport, and storage	22 (14%)	60 (38%)	15 (9%)	- -	3 (2%)	9 (6%)	40 (25%)	6 (4%)	1 (1%)	1 (1%)	157 (100%)
reviews and revises written procedure manual	1 (1%)	80 (50%)	12 (7%)	- -	5 (3%)	- -	32 (20%)	28 (17%)	3 (2%)	- -	161 (100%)
reviews and approves new laboratory methods	- -	48 (30%)	8 (5%)	- -	35 (22%)	- -	20 (12%)	46 (29%)	4 (2%)	- -	161 (100%)
reviews and monitors quality control program	2 (1%)	86 (53%)	7 (4%)	- -	6 (4%)	1 (1%)	26 (16%)	29 (18%)	4 (3%)	- -	161 (100%)
ensures safety program is in compliance with government laws	3 (2%)	41 (26%)	53 (33%)	1 (1%)	8 (5%)	1 (1%)	18 (11%)	30 (19%)	4 (2%)	- -	159 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 15

Performers of Monitoring Tasks in the Clinical Laboratory
Administrative Technologists' Selection

Monitoring Tasks	Administrative Technologists' Selection of Tasks' Performers[a]										Total Row Count
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
reviews and monitors laboratory results for accuracy	7 (5%)	37 (27%)	46 (33%)	- -	7 (5%)	1 (1%)	17 (12%)	20 (15%)	3 (2%)	- -	138 (100%)
reviews and monitors laboratory results for abnormalities	10 (7%)	34 (25%)	44 (32%)	- -	8 (6%)	- -	17 (12%)	21 (15%)	4 (3%)	- -	138 (100%)
monitors adherence to established laboratory procedures	5 (4%)	34 (25%)	71 (51%)	- -	3 (2%)	- -	18 (13%)	6 (4%)	1 (1%)	- -	138 (100%)
monitors specimen collection, transport, and storage	21 (15%)	45 (33%)	40 (29%)	- -	1 (1%)	4 (3%)	15 (11%)	4 (3%)	6 (4%)	1 (1%)	137 (100%)
reviews and revises written procedure manual	1 (1%)	25 (18%)	67 (49%)	- -	6 (4%)	- -	19 (14%)	17 (12%)	3 (2%)	- -	138 (100%)
reviews and approves new laboratory methods	- -	9 (7%)	57 (41%)	- -	29 (21%)	- -	11 (8%)	30 (22%)	2 (1%)	- -	138 (100%)
reviews and monitors quality control program	4 (3%)	17 (12%)	66 (48%)	1 (1%)	5 (4%)	- -	17 (12%)	26 (19%)	2 (1%)	- -	138 (100%)
ensures safety program is in compliance with government laws	- -	8 (6%)	105 (77%)	- -	4 (3%)	- -	11 (8%)	7 (5%)	2 (1%)	- -	137 (100%)

[a] Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 16

Performers of Monitoring Tasks in the Clinical Laboratory
Education Coordinators' Selection

Monitoring Tasks	Education Coordinators' Selection of Tasks' Performers[a]										
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
reviews and monitors laboratory results for accuracy	3 (3%)	36 (40%)	3 (3%)	- -	4 (5%)	- -	15 (17%)	17 (19%)	1 (1%)	11 (12%)	90 (100%)
reviews and monitors laboratory results for abnormalities	5 (6%)	32 (36%)	3 (3%)	- -	7 (8%)	- -	11 (12%)	20 (22%)	1 (1%)	11 (12%)	90 (100%)
monitors adherence to established laboratory procedures	2 (2%)	47 (53%)	6 (7%)	1 (1%)	3 (4%)	- -	9 (10%)	11 (12%)	- -	10 (11%)	89 (100%)
monitors specimen collection, transport, and storage	11 (12%)	37 (41%)	5 (6%)	- -	- -	3 (3%)	18 (20%)	- -	5 (6%)	11 (12%)	90 (100%)
reviews and revises written procedure manual	4 (5%)	34 (37%)	4 (5%)	3 (3%)	4 (5%)	- -	10 (11%)	20 (22%)	1 (1%)	10 (11%)	90 (100%)
reviews and approves new laboratory methods	- -	17 (19%)	3 (3%)	1 (1%)	19 (21%)	1 (1%)	6 (7%)	31 (35%)	2 (2%)	10 (11%)	90 (100%)
reviews and monitors quality control program	3 (3%)	30 (34%)	2 (2%)	2 (2%)	5 (6%)	- -	10 (11%)	26 (29%)	2 (2%)	10 (11%)	90 (100%)
ensures safety program is in compliance with government laws	- -	11 (12%)	24 (27%)	3 (4%)	5 (6%)	- -	9 (10%)	18 (20%)	8 (9%)	11 (12%)	89 (100%)

[a] Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Performers of Monitoring Tasks in the Clinical Laboratory
Staff Technologists' Selection

Monitoring Tasks	Staff Technologists' Selection of Tasks' Performers[a]										Total Row Count
	1 Staff Tech.	2 Lab. Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab. Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
reviews and monitors laboratory results for accuracy	22 (23%)	29 (30%)	10 (10%)	- -	4 (4%)	1 (1%)	16 (16%)	9 (9%)	4 (4%)	3 (3%)	98 (100%)
reviews and monitors laboratory results for abnormalities	24 (25%)	23 (24%)	7 (7%)	- -	6 (6%)	1 (1%)	18 (18%)	13 (13%)	4 (4%)	2 (2%)	98 (100%)
monitors adherence to established laboratory procedures	18 (18%)	43 (44%)	10 (10%)	- -	2 (2%)	1 (1%)	16 (17%)	4 (4%)	2 (2%)	2 (2%)	98 (100%)
monitors specimen collection, transport, and storage	34 (36%)	24 (25%)	6 (7%)	- -	1 (1%)	2 (2%)	19 (20%)	1 (1%)	5 (5%)	3 (3%)	95 (100%)
reviews and revises written procedure manual	12 (12%)	42 (43%)	9 (9%)	- -	4 (4%)	1 (1%)	16 (17%)	9 (9%)	3 (3%)	2 (2%)	98 (100%)
reviews and approves new laboratory methods	5 (5%)	23 (24%)	16 (16%)	- -	17 (17%)	1 (1%)	10 (10%)	22 (23%)	2 (2%)	2 (2%)	98 (100%)
reviews and monitors quality control program	14 (15%)	30 (31%)	10 (10%)	1 (1%)	4 (4%)	1 (1%)	16 (17%)	15 (16%)	3 (3%)	2 (2%)	96 (100%)
ensures safety program is in compliance with government laws	8 (8%)	17 (18%)	36 (38%)	2 (2%)	7 (7%)	2 (2%)	9 (10%)	9 (10%)	3 (3%)	2 (2%)	95 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Total Respondents' Selection

General Operations Tasks	Total Respondents' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8	9	10 NA	Total Row Count
prepares, administers (section) budget	-	52 (11%)	235 (48%)	1 (<1%)	76 (16%)	2 (<1%)	19 (4%)	56 (12%)	25 (5%)	19 (4%)	485 (100%)
maintains the preventative maintenance program	49 (10%)	203 (42%)	98 (20%)	2 (<1%)	6 (1%)	6 (1%)	86 (18%)	2 (<1%)	22 (5%)	14 (3%)	488 (100%)
monitors expiration date of unstable materials	111 (23%)	192 (39%)	34 (7%)	- -	- -	13 (3%)	111 (22%)	1 (<1%)	15 (3%)	14 (3%)	491 (100%)
maintains appropriate inventory of supplies and reagents	79 (16%)	187 (38%)	73 (15%)	- -	1 (<1%)	12 (2%)	108 (22%)	1 (<1%)	15 (3%)	14 (3%)	490 (100%)
selects and orders expendable supplies	43 (9%)	177 (36%)	131 (27%)	1 (<1%)	- -	10 (2%)	96 (19%)	5 (1%)	14 (3%)	14 (3%)	491 (100%)
selects equipment for purchase costing less than $5,000	4 (1%)	71 (15%)	133 (27%)	1 (<1%)	84 (17%)	2 (<1%)	36 (7%)	127 (26%)	15 (3%)	14 (3%)	487 (100%)
selects equipment for purchase costing $5,000 to $20,000	1 (<1%)	24 (5%)	92 (19%)	- -	135 (28%)	2 (<1%)	25 (5%)	171 (36%)	19 (4%)	15 (3%)	484 (100%)
selects equipment for purchase costing more than $20,000	1 (<1%)	15 (3%)	82 (17%)	- -	153 (32%)	2 (<1%)	16 (3%)	174 (36%)	23 (5%)	17 (3%)	483 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

performer. Additionally, the laboratory supervisor was chosen most frequently as the tasks' performer for four of the eight general operations tasks. These four tasks involved monitoring and maintaining supplies and equipment. For the three tasks involving equipment purchases, the total group of respondents indicated that these tasks were primarily a joint function of the laboratory director-pathologist and others.

The staff technologist was selected as a tasks' performer for seven of the eight general operations tasks. The only task that the staff technologist does not perform is the "prepares and administers (section) budget" task. For the "monitoring expiration date of unstable materials" task, 23% of the total respondents indicated the staff technologist is the task's performer. A small percentage, 3% or less, of the total respondents indicated the laboratory technician is a tasks' performer of all eight general operations tasks. The frequencies and percentages for laboratory supervisors, administrative technologists, education coordinators, and staff technologists who selected the various job positions as the general operations tasks' performers are presented in Appendix G.

Education Tasks

Six tasks were listed under education tasks. The first four education tasks involved student education and the last two tasks were concerned with in-service and continuing education. Table 19 presents the data for these tasks. The

Table 19

Performers of Education Tasks in the Clinical Laboratory

Total Respondents' Selection

Education Tasks	Total Respondents' Selection of Tasks' Performers[a]										Total Row Count
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
develops curriculum for students	3 (1%)	33 (8%)	22 (5%)	180 (42%)	6 (1%)	1 (<1%)	34 (8%)	25 (6%)	15 (4%)	107 (25%)	426 (100%)
designs content of student lectures	9 (2%)	51 (12%)	18 (4%)	137 (32%)	21 (5%)	1 (<1%)	32 (8%)	27 (6%)	19 (5%)	109 (26%)	424 (100%)
instructs students in laboratory procedures and use of equipment	71 (17%)	64 (15%)	15 (3%)	23 (5%)	- -	4 (1%)	115 (27%)	11 (3%)	23 (5%)	102 (24%)	428 (100%)
evaluates student performance of laboratory procedures	39 (9%)	97 (23%)	20 (5%)	29 (7%)	- -	2 (<1%)	99 (23%)	9 (2%)	29 (7%)	102 (24%)	426 (100%)
conducts in-service education programs in clinical lab	4 (1%)	56 (13%)	73 (16%)	88 (20%)	33 (7%)	2 (<1%)	49 (11%)	65 (15%)	9 (2%)	69 (15%)	448 (100%)
establishes policy of employee participation in continuing education programs	2 (<1%)	31 (7%)	150 (33%)	48 (10%)	65 (14%)	1 (<1%)	25 (5%)	60 (13%)	12 (3%)	65 (14%)	459 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

response rate for these six tasks was less than that of the other 34 supervisory tasks. Furthermore, in comparison to the other supervisory tasks, a higher percentage of respondents indicated these education tasks were not applicable to their job situation.

As expected, the education coordinator was selected most frequently by the total respondents as the task performer who "develops curriculum for students" and "designs content of student lectures." For these two tasks, the percentage values were 42 and 32, respectively. However, the performers of the other education tasks included all of the clinical laboratory job positions. The respondents in the four job categories indicated that the laboratory director-pathologist had the least amount of participation in the education task. The frequencies and percentages for laboratory supervisors, administrative technologists, education coordinators, and staff technologists that selected the various job positions as the education tasks' performers are presented in Appendix H.

Communications Tasks

Table 20 presents the data on the four communications tasks. For these four tasks, all clinical laboratory job positions were selected as participants. For the "provides consultation in area of specialty on laboratory results" task, 53% of the total respondents selected the laboratory director-pathologist as the task's performer. Furthermore,

Table 20

Performers of Communications Tasks in the Clinical Laboratory

Total Respondents' Selection

Communications Tasks	Total Respondents' Selection of Tasks' Performers[a]										Total Row Count
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
confers with patient physicians on laboratory findings	22 (4%)	47 (10%)	39 (8%)	- -	170 (35%)	3 (1%)	29 (6%)	153 (31%)	12 (2%)	16 (3%)	491 (100%)
provides consultation in area of specialty on lab results	9 (2%)	56 (12%)	33 (7%)	1 (<1%)	256 (53%)	1 (<1%)	16 (3%)	82 (17%)	6 (1%)	18 (4%)	478 (100%)
conducts lab correspondence including matters related to the clinical education program	4 (1%)	30 (6%)	153 (33%)	95 (20%)	42 (9%)	1 (<1%)	17 (4%)	65 (14%)	32 (7%)	32 (7%)	471 (100%)
represents laboratory in inter-departmental procedures and policy matters	3 (1%)	40 (8%)	233 (48%)	3 (1%)	54 (11%)	2 (<1%)	18 (4%)	105 (22%)	7 (1%)	20 (4%)	485 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

of the total respondents, 17% indicated this task was a joint function involving the laboratory director-pathologist and other clinical laboratory job positions. For the "conducts laboratory correspondence including responding to inquiries related to the clinical education program" task and "represents laboratory in interdepartmental procedures and policy matters" task, the administrative technologist was selected most frequently by the total respondents as the performer of these tasks. The education coordinator was chosen by 20% of the total respondents as the second most frequent performer of the task involving laboratory correspondence. The frequencies and percentages for laboratory supervisors, administrative technologists, education coordinators, and staff technologists that selected the various job positions as the communications tasks' performers are presented in Appendix I.

Summary of Data on Supervisory Tasks

The data from Section II of the questionnaire identified all six clinical laboratory job positions as participants in supervisory tasks. The laboratory supervisor was indicated to participate in the direct supervision task, monitoring tasks, and general operations tasks more frequently than in the personnel relations tasks, education tasks, and communications tasks. Moreover, the comparison of data from the laboratory supervisors and education coordinators showed similarities in their responses. The identification of the staff

technologist as a supervisory tasks' performer provided additional justification for the administrative and supervisory competencies that a medical technology student needs to acquire.

Tasks' Teaching Importance

Section III of the questionnaire asked the respondents to rank the six categories of supervisory tasks in the order of their teaching importance. This section was directed towards the first research question posed by this study: In what hierarchical sequence should the medical technology laboratory supervisory tasks be taught? As a refinement of this question, the following null hypothesis was proposed and tested at the .05 level of significance: There is no correlation between the laboratory supervisors' rankings and administrative technologists' rankings of the tasks' teaching importance.

To test this hypothesis, medians were computed on the laboratory supervisors' rankings and administrative technologists' rankings of the tasks' teaching importance. Table 21 shows the medians. These medians were utilized to measure the correlation between the two supervisory sample groups of rankings. The formula shown in Chapter III for Kendall's tau was applied to these data, yielding tau = .44. The significance of "tau" was computed and found to be .75. This value was not significant at the .05 level; therefore, the null hypothesis was not rejected. These findings indicate that the laboratory

Table 21

Median Rankings of Tasks' Teaching Importance by Supervisory Groups

Tasks' Category[a]	Groups	
	Laboratory Supervisors	Administrative Technologists
Personnel Relations Tasks	3	3
Direct Supervision Tasks	3	3
Monitoring Tasks	3	4
General Operations Tasks	3	3
Education Tasks	5	5
Communications Tasks	4	3

[a]The listing of the tasks in each category is shown in Section II of the questionnaire (see Appendix D).

supervisors' rankings and administrative technologists' rankings do not correlate with the supervisory tasks' teaching importance.

Tasks Requiring the Most Time

Section IV of the questionnaire asked the respondents to rank the six categories of supervisory tasks according to the amount of time the task category requires during a normal work week. This section pertained to the second research question asked by this study: What amount of time is devoted to performing each of the medical technology laboratory supervisory tasks? As a refinement of this question, the following

null hypothesis was proposed and tested at the .05 level of significance: There is no correlation between the laboratory supervisors' rankings and administrative technologists' rankings for time requirements of the tasks' performance.

To test this hypothesis, medians were computed on the laboratory supervisors' rankings and administrative technologists' rankings for time requirements of the tasks' performance. Table 22 presents the computed medians. These medians

Table 22

Median Rankings of Tasks' Time Requirements by Supervisory Groups

Tasks' Category[a]	Groups	
	Laboratory Supervisors	Administrative Technologists
Personnel Relations Tasks	4	3
Direct Supervision Tasks	2	4
Monitoring Tasks	2	3
General Operations Tasks	3	3
Education Tasks	5	6
Communications Tasks	5	3

[a]The listing of the tasks in each category is shown in Section II of the questionnaire (see Appendix D).

were utilized to measure the correlation between the two supervisory sample groups of rankings. Kendall's tau was applied to these data, yielding tau = .13. The significance of "tau" was computed and found to be .23. This value was not

significant at the .05 level; therefore, the null hypothesis was not rejected. These findings indicate that the laboratory supervisors' rankings and administrative technologists' rankings do not correlate for time requirements of the tasks' performance.

Knowledge Base Requirements

Section V of the questionnaire pertained to the third research question asked by this study: What is the knowledge base requirement for the laboratory supervisory tasks? This section asked the respondents to rate 15 of the supervisory tasks according to Guilford's cognitive products. Guilford developed six cognitive products on a hierarchical scale, but this study utilized only the three products that were highest on the scale. The justification for utilizing only these three cognitive products is that: (a) administrative and supervisory tasks require high levels of knowledge and skills, and (b) it was easier and less time consuming for the respondents to choose from three cognitive products rather than the six cognitive products. As a result, the following cognitive products and number codes were utilized in the questionnaire:

- 1. Requires dealing with "patterns" of interdependent or interacting parts (e.g., interacting people).
- 2. Involves "changes" of various kinds such as redefinitions or transitions in existing information (e.g., changes in policies or procedures).

- 3. Ability to mentally "explore" various courses of action so that the most effective course may be selected (e.g., projecting new ways to classify a job).

Table 23 shows the data from the respondents' ratings of the supervisory tasks. The staff technologists, laboratory supervisors, administrative technologists, and education coordinators most frequently selected the "patterns" cognitive product for the three personnel relations tasks listed in this section. Moreover, 50% of the total survey respondents chose the "patterns" cognitive product for the "prepares daily work schedule" task and "conducts laboratory correspondence" task.

For the following task "ensures safety program is in compliance with government standards," the respondents from the four job categories most frequently selected the "changes" cognitive product. On the other hand, the "explore" cognitive product was chosen by a majority of the respondents for only one task. This task was "prepares and administers budget" in which 55% of the total survey respondents selected the highest level cognitive product.

The ratings of the other tasks were diffused among the three cognitive products showing no definite trend. However, this diffusion may have resulted from the difficulty in rating tasks according to Guilford's cognitive products.

Table 23

Supervisory Tasks Rated by Guilford's Cognitive Products*

	Staff Technologist n=113			Supervisor n=163			Adm. Technologist n=141			Education Coordinator n=94			Other n=6			Total n=518		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
PERSONNEL RELATIONS TASKS																		
Interview prospective employees	81%	1%	18%	77%	2%	21%	88%	1%	11%	92%	1%	7%	40%	-	60%	83%	2%	15%
Selects prospective employees	67%	3%	30%	66%	5%	29%	72%	3%	25%	72%	7%	21%	50%	-	50%	69%	4%	27%
Evaluates employee capabilities and performance	57%	12%	31%	61%	13%	26%	65	13%	22%	57%	15%	28%	80%	-	20%	61%	13%	26%
DIRECT SUPERVISION TASKS																		
Organizes and institutes flow patterns of work	26%	36%	38%	24%	39%	37%	18%	37%	45%	24%	37%	39%	40%	40%	20%	23%	38%	39%
Prepares daily work schedule	55%	20%	25%	46%	19%	35%	52%	18%	30%	55%	18%	27%	-	50%	50%	51%	19%	30%
MONITORING TASKS																		
Reviews and monitors lab results for accuracy	31%	46%	23%	28%	49%	23%	41%	34%	25%	37%	41%	22%	50%	25%	25%	34%	43%	23%
Reviews and monitors quality control program	25%	53%	22%	24%	53%	23%	40%	37%	23%	26%	46%	18%	50%	-	50%	31%	47%	22%
Ensures safety program is in compliance with government standards	25%	48%	27%	21%	55%	24%	23%	53%	24%	23%	54%	23%	40%	60%	-	23%	53%	24%
GENERAL OPERATIONS TASKS																		
Prepares, administers budget	12%	28%	60%	14%	33%	53%	13%	26%	61%	14%	41%	45%	20%	-	80%	14%	31%	55%
Maintains the preventative maintenance program	37%	37%	26%	30%	45%	25%	47%	37%	15%	43%	43%	14%	-	100%	-	39%	40%	21%
EDUCATION TASKS																		
Conducts in-service education programs in clinical lab	32%	36%	32%	38%	30%	32%	35%	27%	38%	23%	31%	46%	25%	25%	50%	33%	31%	36%
Establishes policy of employee participation in continuing education programs	39%	25%	36%	46%	25%	29%	42%	34%	24%	31%	36%	33%	20%	60%	20%	40%	30%	30%
COMMUNICATION TASKS																		
Provides consultation in area of specialty on lab results	30%	28%	42%	40%	25%	35%	42%	22%	36%	32%	17%	51%	40%	-	60%	37%	23%	40%
Conducts lab correspondence including matters related to the clinical education program	43%	26%	31%	46%	23%	31%	50%	18%	32%	66%	12%	22%	60%	20%	20%	50%	20%	30%
Represents lab in interdepartmental procedures and policy matters	40%	25%	35%	52%	22%	26%	37%	38%	25%	39%	29%	32%	75%	25%	-	43%	29%	29%

*Guilford's Cognitive Products: 1 = Patterns, 2 = Changes, 3 = Explore.

Task Detailing

As presented in Table 24, task detailing was to identify the tasks' knowledge and skills in order to determine the competencies for the administrative and supervisory tasks. This

Table 24

Task Detailing of Laboratory Supervisory Tasks

Tasks	Task Detailing
PERSONNEL RELATIONS TASKS	
Determines academic, experience and personal qualifications	1. Skill to: (a) gather data for interview, (b) ask appropriate questions in an interview, and (c) clarify statements in an interview.
Interviews prospective employees	2. Skill to maintain impartial attitude when interviewing and evaluating personnel.
Selects prospective employees	3. Skill to allow communication changes for feedback.
Evaluates employee capabilities and performance	4. Skill to judge people's capabilities and attitudes.
Recommends employee transfers and discipline	5. Knowledge of clinical lab tests and procedures.
Recommends discharge of employees	6. Knowledge of capabilities of subordinates.
Recommends hiring additional staff	7. Acquires positive attitude to consider needs of personnel.
Determines which employees are promoted to new positions	8. Ability to recognize individual differences as to capacities, interests, ambitions, emotional reactions, etc.
	9. Skill to develop an evaluation tool that accurately measures the performance level of the employee.
	10. Knowledge of future trends in clinical lab medicine to make decisions concerning employees.
	11. Knowledge of operating rules and regulations to hire, discipline, and dismiss employees.
	12. Skill to interpret the facts and attitudes to determine a line of action.
	13. Skill to foresee changes in the organizational system and structure.

Table 24--Continued

Tasks	Task Detailing
DIRECT SUPERVISION TASKS	
Trains new employees in lab procedures	1. Knowledge and skill of clinical lab procedures and equipment. 2. Knowledge of information sources for equipment and procedures. 3. Skill to complete work-productivity records. 4. Knowledge to plan and organize efficient patterns of work activities. 5. Ability to perceive attitudes of subordinates towards patterns of work activities. 6. Acquire positive attitude to consider needs of personnel.
Gives instruction on a daily basis	
Trains employees on new equipment and procedures	
Observes employee's technical performance of procedures	
Organizes and institutes flow patterns of work	
Prepares daily work schedule	
MONITORING TASKS	
Reviews and monitors lab results for accuracy	1. Knowledge and skill of clinical lab procedures. 2. Knowledge of normal values for lab tests. 3. Knowledge of new equipment and techniques for clinical lab tests. 4. Knowledge of specialists to consult on equipment and procedures. 5. Knowledge of one's responsibility for work output and lab results. 6. Knowledge of quality control procedures. 7. Knowledge of governmental standards for safety. 8. Ability to plan and organize for quality control programs and safety programs.
Reviews and monitors lab results for abnormalities	
Monitors adherence to established lab procedures	
Monitors specimen collection, transport, and storage	
Reviews and revises written procedure manual	

Table 24--Continued

Tasks	Task Detailing
Reviews and approves new lab methods	9. Skill to implement these programs. 10. Knowledge of legal responsibility for maintaining these organizational functions.
Reviews and monitors quality control program	
Ensures safety program is in compliance with governmental standards	
GENERAL OPERATIONS TASKS	
Prepares and administers (section) budget	1. Knowledge of budgetary policy and record-keeping of lab. 2. Knowledge of past years need/cost for supplies, manpower, and equipment. 3. Knowledge of appropriate funds for particular lab section. 4. Knowledge of needed supplies, manpower, and equipment. 5. Skill to organize for storage and inventory of supplies and equipment. 6. Knowledge of the lab rules and regulations for storage and inventory of supplies and reagents. 7. Knowledge to anticipate inflationary costs. 8. Knowledge to anticipate future need/cost for supplies, manpower, and equipment. 9. Skill to complete budget report. 10. Skill in maintenance and repair of instruments.
Maintains the preventative maintenance program	
Monitors expiration date of unstable materials	
Maintains appropriate inventory of supplies and reagents	
Selects and orders expendable supplies	
Selects equipment for purchase costing less than $5,000	
Selects equipment for purchase costing $5,000 to $20,000	
Selects equipment for purchase costing more than $20,000	

82

Table 24--Continued

Tasks	Task Detailing
EDUCATION TASKS	
Develops curriculum for students	1. Knowledge and skill of clinical lab procedures and equipment. 2. Knowledge and skill to determine needs of students and subordinates for educational activities.
Designs content of student lectures	
Instructs students in lab procedures and use of equipment	3. Skills to teach clinical lab procedures and utilization of equipment.
Evaluates student performance of lab procedures	4. Knowledge of methods to motivate personnel to participate in continuing education programs.
Conducts in-service education programs in clinical lab	5. Skill to anticipate and plan for future educational needs.
Establishes policy of employee participation in continuing education programs	6. Skill to arrange and make schedules for education programs. 7. Skill to evaluate effectiveness of educational programs.
COMMUNICATIONS TASKS	
Confers with patient physicians on lab findings	1. Knowledge of normal values for lab procedures. 2. Knowledge of physiological conditions associated with lab results.
Provides consultation in area of specialty on lab results	3. Skill to judge people's capabilities and attitudes.
Conducts lab correspondence including responding to inquiries related to the clinical education program	4. Skill to refer problems to appropriate personnel. 5. Knowledge and skill to write letters, references, complete forms, etc.
Represents lab in interdepartmental procedures and policy matters	6. Skill to undertake public relations' activities. 7. Skill to allow communication channels for feedback.

Table 24--Continued

Tasks	Task Detailing
	8. Must have knowledge of one's position in the organizational structure of the lab and institution. 9. Skill in decision-making processes. 10. Skill to perceive attitudes of others to the decisions. 11. Must have knowledge of institutional and lab policies and procedures. 12. Skill to incorporate policies and/or procedures. 13. Knowledge of the institutional and lab goals.

procedure was executed on the six categories of supervisory tasks that appeared in Section II of the questionnaire. Thus, task detailing complemented the data analysis from the Clinical Laboratory Supervision Survey and provided a design from which competencies were developed for an instructional program in medical technology administration and supervision.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

The purpose of this study was to develop medical technology administrative and supervisory competencies by surveying and analyzing the administrative and supervisory tasks performed in the clinical laboratory. Focusing on the research questions and hypotheses, identifying the actual clinical laboratory supervisory tasks' performers, and determining the tasks' knowledge and skills through task detailing made it possible to develop a set of competencies for an instructional program in medical technology administration and supervision.

Summary

The information that formed the bases for this study was derived from responses to the Clinical Laboratory Supervision Survey completed by medical technologists, laboratory supervisors, administrative technologists, and education coordinators who belong to the American Society for Medical Technology. The survey instrument, composed of five sections, included data on: (a) Section I--general background characteristics of the respondents, (b) Section II--job positions of the individuals who perform the six categories of supervisory tasks, (c) Section III--rankings of the supervisory tasks' teaching importance, (d) Section IV--rankings of the

supervisory tasks' time requirements, and (e) Section V--Guilford's cognitive product ratings of the supervisory tasks.

Briefly, the findings of the survey are listed below by sections:

- From the findings in Section I, the highest percentage of respondents are employed in private hospitals, with the baccalaureate degree being the most frequent "highest educational level attained." Of the total respondents, 55.6% have been employed in medical technology for more than ten years, and 84.7% of the respondents have personnel under their supervision. For the respondents' places of employment, 57.1% have an accredited medical laboratory technician (MLT) or medical technology (MT) educational program.
- The data in Section II reveals that the staff technologist, laboratory supervisor, administrative technologist, education coordinator, laboratory director-pathologist, and laboratory technician are performers of supervisory tasks. The laboratory supervisor participates in the direct supervision tasks, monitoring tasks and general operations tasks more frequently than personnel relations tasks, education tasks, and communications tasks. Comparison of data shows that laboratory supervisor respondents, more often than administrative technologist

respondents, consider the staff technologist a supervisory tasks' performer. Comparison of data from the laboratory supervisor respondents and education coordinator respondents showed similarities in their results. Data from the total group of respondents illustrate a lack of participation in in-service and continuing education programs.

- Data on rankings in Section III caused rejection of the hypothesis on the laboratory supervisors' rankings and administrative technologists' rankings of teaching importance for the six categories of supervisory tasks. However, for both supervisory groups, the education tasks' category was indicated as the least important in a medical technology administrative and supervisory curriculum.
- Data on rankings in Section IV showed the time requirements for the six categories of supervisory tasks are different for the laboratory supervisors and administrative technologists. The only similarity in the two supervisory groups' rankings is on the education tasks' category. Both groups indicated that this category took the least amount of time in comparison to the other five task categories.
- Results in Section V demonstrated that the total group of respondents most frequently selected the "patterns" cognitive product for three personnel

relations tasks, one direct supervision task, and one communications task. The "changes" cognitive product was chosen by a majority of the respondents for only one task. The "explore" cognitive product was chosen by a majority of the respondents for the "prepares and administers budget" task. For the other tasks, the scattering of responses among the three cognitive products gave no definite trend as to the tasks' cognitive product rating. The diffusion of responses among the three cognitive products probably resulted from the difficulty in rating tasks according to Guilford's cognitive products.

Besides analyzing data from responses on the Clinical Laboratory Supervision Survey, this study provided a task detailing of the six categories of supervisory tasks. The purpose of task detailing was to identify the tasks' knowledge and skills in order to further determine the competencies for the administrative and supervisory tasks.

Conclusions

The primary purpose of this study was to develop the medical technology administrative and supervisory competencies from data analysis and list these competencies in the hierarchical sequence established by the study. Sufficient data were obtained to verify the realization of this purpose.

From Section II of the survey instrument, it was determined that the response rate for the six education tasks

was not as great as for the other supervisory tasks. Additionally, in comparison to the other supervisory tasks, a higher percentage of respondents indicated these education tasks were not applicable to their job situation. However, since many respondents had no MLT or MT educational programs in their places of employment, the "not applicable" responses were understandable for the student education tasks. On the other hand, with the governmental and professional emphasis on continuing education for health professionals, the "not applicable" responses for the two tasks concerned the in-service and continuing education were inconceivable. In order to provide the best possible health care as well as to remove outmoded and less effective services and procedures, continuing education must be developed, available, and emphasized. In fact, the Health Resources Administration asserts that employers should be "encouraged to provide opportunity for participation in programs directed toward assuring continuing competence; participation should be a major criteria in employee evaluation and incentives" (Health Resources Administration, 1976, p. 19).

Data in Section II also illustrated that in addition to the laboratory supervisor, the staff technologist is a supervisory tasks' performer. The staff technologist was most frequently chosen by the total group of respondents as a performer of the direct supervision tasks, monitoring tasks, and general operations tasks. Comparison of data from the

laboratory supervisor respondents and administrative technologist respondents showed that the staff technologist is more often considered a supervisory tasks' performer by the laboratory supervisor respondents than by the administrative technologist respondents. On the other hand, the data from the staff technologist respondents closely agreed with the data from the laboratory supervisor respondents for the particular supervisory tasks that the staff technologist performs. These data give evidence that the administrative technologist's role is somewhat removed from the daily work activities of the staff technologists. In contrast, the laboratory supervisor's role is shown to be more clearly related to these activities.

The laboratory supervisor was selected by the staff technologist respondents, administrative technologist respondents, and education coordinator respondents as a participant in direct supervision tasks, monitoring tasks, and general operations tasks more often than in personnel relations tasks, education tasks, and communications tasks. These data from Section II closely agreed with the laboratory supervisors' median rankings of the supervisory tasks' time requirements in Section IV of the questionnaire. The rankings on the direct supervision tasks and monitoring tasks were the same for the tasks' categories requiring the most time for laboratory supervisors in a normal work week. Ranked under these two tasks' categories in sequential order

were the general operations tasks and the personnel relations tasks. The rankings on the education tasks and communications tasks were the same for the tasks' categories requiring the least amount of time during a normal work week.

Data from the administrative technologists' median rankings show that the supervisory tasks requiring the most are: the personnel relations tasks, monitoring tasks, general operations tasks, and communications tasks. Ranked under these four tasks' categories in sequential order were the direct supervision tasks and the education tasks. It is additionally obvious from the data that the clinical laboratory functions of the administrative technologists and laboratory supervisors are considerably different.

Data from the laboratory supervisors' rankings and administrative technologists' rankings on the teaching importance of the six categories of supervisory tasks were utilized as an attempt to develop a hierarchical scale for the set of medical technology administrative and supervisory competencies. This study's findings point to the lack of correlation between the laboratory supervisors' rankings and administrative technologists' rankings. However, due to the contrast in their roles as supervisory tasks' performers, it seems reasonable that these two supervisory groups would rank the tasks' teaching importance differently from one another.

Since it was established earlier in the study that the medical technology graduate needs specific competencies for

the laboratory supervisory position, the laboratory supervisors' rankings on the tasks' teaching importance were utilized instead of the administrative technologists' rankings to develop a hierarchical scale for the set of medical technology administrative and supervisory competencies. Due to the four identical rankings on the laboratory supervisors' median rankings of the supervisory tasks' teaching importance, data were also incorporated from the laboratory supervisors' median rankings of the supervisory tasks' time requirements to develop the hierarchical scale. The implementation of data on the tasks' time requirements were justifiable for the development of the scale since medical technology students eminently need competencies for those tasks requiring the greatest amount of performance time.

Consequently, from Sections III and IV of the questionnaire, the following hierarchical scale of tasks' categories was derived for a set of medical technology administrative and supervisory competencies.

- 1. Direct supervision tasks and monitoring tasks had the same ranking
- 2. General operations tasks
- 3. Personnel relations tasks
- 4. Communications tasks
- 5. Education tasks

Data from Section V of the questionnaire were utilized to establish knowledge base requirements for 15 of the

supervisory tasks. This objective was partially achieved since the data on the ratings established knowledge base requirements for seven of the supervisory tasks. These seven ratings were utilized as a framework in designing the competencies that complemented these seven tasks.

Implications

Based upon the preceding review of the literature, the findings of this study and subsequent conclusions, the following hierarchical list of competencies has been developed by the author to serve as a basic design for a medical technology administrative and supervisory instructional program. The formulation of these competencies was based upon the model presented in the monograph A CBC Primer (1975) which examines competency based curriculum.

Each category of competencies is presented with one or more major competencies. Furthermore, some of the major competencies involving complex, coordinated behaviors have been supplemented with a group of competencies involving less complex behaviors. The "less complex" competencies have been written in order to provide a beginning point from which it is possible to build towards complex, coordinated behaviors.

Direct Supervision Competencies

1. Given a description of a clinical laboratory and its hospital environment, the student will be able to design or modify the organizational structure

for the laboratory and cite a rationale for such a structure.

a. The student will be able to construct an organational chart that shows the formal relationship between all laboratory personnel.

b. Given an organizational chart, the student will be able to cite the duties and responsibilities for specified laboratory personnel.

c. Given an organizational structure and a problem concerning a laboratory employee, the student will be able to designate the formal communication lines that should function in solving the problem. The student should also be able to designate who is accountable in the above situation.

d. Given a description of a clinical laboratory and its hospital environment, the student will be able to delineate the formal and informal organizational structure that exists and give examples of a decision that could be made through informal rather than formal channels.

2. Given a hypothetical clinical laboratory setting including information on personnel, definite time period for laboratory results, and information on space and time, the student will be able to design a laboratory schedule which provides a balanced

work load for personnel. He/she will also be able to design a schedule which is flexible and which permits employees to change designated work duties for special situations. Finally, he/she will be able to evaluate the schedule in terms of work output, space, time, and personnel.

3. Given a description of a clinical laboratory and its environment, the student will be able to identify: (a) the information that should be included in personnel orientation procedures, and (b) the laboratory personnel with whom the new employees should become acquainted.
4. Given the name of a particular laboratory procedure and/or laboratory instrument, the student will be able to describe instructional methods that can be utilized in training employees to run the laboratory procedure and/or instrument.

Monitoring Competencies

1. Given a description of a clinical laboratory section and/or the total clinical laboratory, the student will be able to design an efficient system for monitoring specimen collection, transport, storage, and laboratory testing.
2. Given a hypothetical clinical laboratory setting with a designated number of medical technologists, the student will be able to design an efficient

method for monitoring laboratory results for accuracy and abnormalities.

3. Given a description of three new laboratory procedures, the student will be able to evaluate, select, and justify in writing why he/she selected the particular procedure for the laboratory.
4. Given a description of a clinical laboratory section, the student will be able to design a quality control program that includes: (a) identification of the measurable parameters and the acceptable range for each parameter, (b) selection of appropriate control samples, (c) establishment of a schedule for evaluating control sample values, (d) establishment of a quality control record-keeping system, (e) development of data collection techniques, (f) definition of action to be taken when control sample is outside acceptable limits, and (g) evaluation of procedures to measure effectiveness of the quality control program.
5. Given a clinical laboratory setting, the student will be able to develop a safety program for employees that complies with governmental regulations. The student will also be able to develop a strategy for implementing this program.
   a. The student will become familiar with the Occupational Safety and Health Act (OSHA) and

describe at least three regulations that apply to the clinical laboratory.

b. Given the record-keeping requirements of OSHA, the student will be able to complete the records that are required by law. These records must meet requirements specified by OSHA.

c. The student will be able to develop a strategy for implementing a safety program in the laboratory. The strategy must include not only a procedure for starting the program, but also the procedure for record-keeping activities, inspecting and program assessment.

c. The student will be able to delineate the action to be taken in case of personnel accident or injury.

General Operations Competencies

1. The student will be able to identify the components of and maintain an efficient record-keeping system covering the clinical laboratory fiscal records, inventories, equipment maintenance records, supplies, and reagents.

2. Given data on needed supplies, reagents and equipment for the clinical laboratory, the student will be able to prepare a budget.

a. The student will be able to identify six budgetary factors used in determining total clinical laboratory costs (e.g., salary schedule, equipment needs, etc.).

b. The student will be able to list potential sources for obtaining information on new supplies, reagents, and equipment. He/she must also be able to describe how the information could be used for intermediate and long range budgetary planning.

c. Given clinical laboratory supply catalogs, the student will be able to list four different sources for procuring a needed item for the clinical laboratory.

d. Given a current inventory with the rate of laboratory supply usage, the student will be able to construct a sequence calendar for acquiring the supplies and equipment needed for a particular laboratory section.

e. Given data on quality discounts from four clinical laboratory suppliers, the student will be able to correctly determine the supplier with the most economical prices.

f. Given a specific item, the student will be able to outline the necessary steps to purchase the items for the clinical laboratory.

g. The student will be able to list considerations in determining priority for supplies and equipment.

3. Given the description of a clinical laboratory setting, the student will be able to design a purchasing system to maintain appropriate inventory of supplies and reagents. This design should include: (a) evaluation of the work load to determine supply levels, and (b) establishment of a record-keeping system to insure adequate levels of supplies and reagents.

4. Given the names of specific laboratory instruments, the student will be able to design a preventative maintenance program which includes: (a) developing methods to check and maintain instruments, (b) determining frequency of checks necessary for each instrument, (c) developing a system to record checks and maintenance of instruments, and (d) determining the type and number of job positions responsible for the execution of preventative maintenance program.

Personnel Relations Competencies

1. The student will be able to develop job descriptions incorporating the responsibilities, qualifications, and salary information for professional staff and support personnel. The student should

also be able to include a follow-up to insure that job descriptions actually match job duties, requirements, and training.

a. Given a list of clinical laboratory job positions, the student will be able to list the tasks for each position as well as the chain of command. The student will be able to construct an organizational chart showing the relationship of each position.

b. The student will be able to list external sources with which he/she could communicate in order to alert individuals of clinical laboratory vacancies.

c. To evaluate job descriptions, the student will be able to compare the job being done with the job description, and review the job description if needed.

2. Given a number of job applications and a description of a clinical laboratory setting, the student will be able to select the applicants who qualify for the positions according to organizational requirements and qualifications of applicants. The student will also be able to rank the applicants according to criteria provided for each job position.

3. The student will be able to demonstrate the following behaviors in an interviewing process: (a) shows respect for interviewee, (b) maintains comfortable and acceptable posture, (c) asks open-ended questions that draw out the interviewee, (d) asks questions to obtain all needed information, (e) gives the interviewee an opportunity to ask questions, (f) exhibits nonjudgmental attitude, (g) uses paraphrasing or summarizing to clarify, and (h) makes appropriate conclusions as to what notification will be given and what the interviewee is expected to do if a position is offered.
4. Given a hypothetical interview setting, the student will be able to prepare in writing a set of questions to be asked by the interviewer and the interviewee during the course of the interview.
5. The student will be able to state general purposes of the interviewing process and provide and defend a rationale for the interview.
6. The student will be able to design an evaluation form to appraise the professional behavior of personnel. The student will be able to develop a rationale supporting this evaluation procedure.
   a. The student will be able to list potential data sources for obtaining information relevant to

laboratory employee evaluation procedures. The student will also be able to describe the type of information each source can provide and explain how that information could be used in developing an evaluation program.

b. The student will be able to list conceptual elements of the management-by-objective (MBO) program and its advantages and disadvantages.

c. The student will be able to write MBO program objectives which are measurable.

7. Given a situation involving administrative responsibilities in the clinical laboratory, the student will be able to identify the legal requirements for disciplinary and dismissal possibilities of personnel.

a. The student will be able to defend an outlined course of action to be followed by the supervisor which is fair and impartial, respectful of the individual, and professionally courteous.

b. The student will be able to describe the procedures to follow to help improve an employee's performance and, if necessary, effect a legal disciplinary or dismissal procedure.

8. Given a description of a clinical laboratory setting, the student will be able to write justifications that explain why additional personnel should

be hired when necessary.

9. Given a clinical laboratory situation and background data, the student will be able to determine which records to maintain with the personnel files. The student will also be able to determine where to locate the personnel files and who should have access to them.

Communications Competencies

1. Given the need for written communications, both within and outside of the organization, the student will be able to demonstrate the ability to write in a clear, complete, and concise manner which results in conveying the intended message.
   a. Given a series of sample forms of written communications, the student will be able to make corrections which insure the communications are clear, complete, and concise.
   b. Given a hypothetical clinical laboratory situation, the student will be able to prepare written forms of communications about that situation which are written in a clear, complete, and concise manner.
2. Given a list of clinical laboratory records, reports, and correspondence, the student will be able to categorize these records, reports, and correspondence according to his/her predetermined

plan. He/She will be able to devise a file folder title for each item listed.

3. The student will be able to design technical manuals and forms (e.g., time records, memorandums, student performance records, report forms).
4. Given a clinical laboratory case study, the student will be able to identify the proper protocol for conferring with physicians on laboratory findings.
5. After reviewing hospital policies, rules, and regulations, the student will be able to write specific policies, rules, and regulations for a clinical laboratory that conform to the hospital's policies, rules, and regulations.

Education Competencies

1. Given a specific subject pertaining to clinical laboratory medicine, the student will be able to design a curriculum which includes: (a) diagnosing the needs of the curriculum with consideration for the requirements for licensure, certification, and accreditation, (b) stating specific curriculum goals and competencies to be achieved, (c) defining teaching strategies to incorporate into the curriculum, (d) describing methods that could evaluate the effectiveness of the curriculum, and (e) listing budgetary factors that would have to

be considered to establish the curriculum.

2. Given a specific subject pertaining to clinical laboratory medicine, the student will be able to: (a) design specific competencies that a lecture would address, (b) design the lecture, and (c) write an exam that would measure the extent to which the competencies had been achieved.
3. Given a clinical laboratory situation, the student will be able to identify: (a) the needed in-service and continuing education programs, (b) the specific objectives of the programs, (c) methods of involving personnel in developing in-service and continuing education programs, (d) techniques and policies to be utilized in motivating the laboratory personnel to participate, (e) methods to be utilized in presenting the programs, and (f) procedures to evaluate the programs.

Suggestions for Further Research

The data collected in this study resulted in a recommended set of medical technology administrative and supervisory competencies to be used in medical technology curricula. No attempt was made, however, to determine what instructional materials should be prepared in order to incorporate these competencies in medical technology curricula. Therefore, additional research should be conducted to create learning activities and proficiency tests derived from the

administrative and supervisory competencies. Thus, a complete instructional program in medical technology administration and supervision could become available for implementation into medical technology curricula nationwide.

While the primary purpose of this study was to develop a set of medical technology administrative and supervisory competencies, one additional finding should be considered for further research. Because of the respondents' lack of participation in continuing education programs, additional research is needed to explore courses of action that will motivate medical technologists to become participants in continuing education activities.

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APPENDIX A

Letter of Agreement

American Society for Medical Technology
Suite 200 5555 West Loop South
Bellaire, Texas 77401
A/C 713 664-8121

Nancy Preuss

October 6, 1976

Letter of Agreement Concerning the Clinical Laboratory Supervision Survey

The American Society for Medical Technology and Kathleen Elizabeth McBride agree to provide the below specified services in a course of conducting a survey of approximately 1200 ASMT Active members. The survey's objective is to determine the degree of involvement in supervisory tasks performed by Active members; frequency in time required and teaching importance of six categories of supervision tasks; and knowledge base of selected supervisory tasks.

The American Society for Medical Technology will provide:

1. Design of questionnaire demographics and supervisory tasks section
2. Consultant time on sections concerning knowledge base requirments and cognitive product ratings; frequency in time rankings for tasks; and ranking of importance of tasks in medical technology program curriculum
3. Survey material for approximately 1200 members including mailing labels, business reply envelopes, and postage.
4. Processing of returned questionnaires.
5. Keypunching of returned questionnaires and provide computer cards.
6. Consultant time on programming.
7. Preparation of survey findings summary.

Kathleen Elizabeth McBride will provide:

1. Design of sections on knowledge base and cognitive product ratings; frequency in time rankings; and rankings of importance of tasks in curriculum.
2. Specification of supervisory tasks as developed from in-person open-ended interviews.
3. Perusal of returned questionnaires.
4. Coding for keypunching where necessary.
5. Programming for tabulation and machine costs.
6. Data analysis including tabulations for all respondents; 10 ASMT Regions; type of facility; size of hospital; job possession; number of staff supervised; and years of service.
7. Prepare full report and data presentation.

Time schedules

Anticipated mailing date for the first 50 - 100 questionnaires	October 1, 1976
Anticipated mailing date for 1150 questionnaires	October 29, 1976
Full report and date presentation target date	January 15, 1977
Survey summary report target date	January 30, 1977

The questionnaire will be copywrighted by the American Society for Medical Technology and permission to use the questionnaire will require the signature of the ASMT Executive Vice President and Kathleen Elizabeth McBride.

Kathleen Elizabeth McBride is invited to submit a manuscript of the study findings to the Editorial Board of the American Journal of Medical Technology. ASMT and Kathleen Elizabeth McBride may publish and utilize the survey findings as they deem appropriate.

ASMT will acknowledge Miss McBride's contribution in any report of the survey findings. Kathleen Elizabeth McBride will acknowledge ASMT's contribution in any report of the survey findings.

Accepted by the American Society for Medical Technology

Nancy Prevas
Executive Vice President

Oct 4, 1976
Date

Accepted by Kathleen Elizabeth McBride

Kathleen Elizabeth McBride
Kathleen Elizabeth McBride

Oct. 5, 1976
Date

APPENDIX B

Task Survey Questionnaire

TASK SURVEY QUESTIONNAIRE

1. Your job is classified in which of the following levels?
   ( ) line supervisor
   ( ) chief medical technologist
   ( ) pathologist
   ( ) other, please indicate

2. Identify the type(s) of college degree(s) which you have earned. (EXAMPLES: B.S., B.A., M.Ed., ...)

3. How many years of clinical laboratory experience did you have prior to your present supervisory/administrative position?

   a. If not, do you wish you had prior formal course work?

   b. If yes to (a), in what areas do you wish you had the formal course work?

      Budget -

      Policies -

      Scheduling -

      Evaluation of personnel; procedures -

      Planning in-service programs -

      Coordinating functions, i.e., coordinate safety programs

      Communications and/or public relations -

      Counseling -

      Personnel and hiring practices -

      Future planning -

      Others -

5. How did you acquire your supervisory/administrative position? (experience, education, etc.)

6. How many years have you had your present supervisory/ administrative position?

7. Have you had any formal course work in supervision or administration since you obtained the supervisory/administrative position? If so, in what areas?

8. With the understanding that Medical Technology students are beginning to have questions on the registry pertaining to administration/supervision, what formal course work in the area of administration/supervision do you think should be taught to Medical Technology students?

9. Should a Medical Technology student be prepared to step into an administrative/supervisory position immediately upon graduation from Medical Technology School? What particular position, if any?

Comments: _____

Please place a check in the blanks of those tasks which you consider to be tasks of the first line supervisor.

___ A. Budget Planning and Control
___ 1. Prepare budget--personnel, supplies, new equipment
___ 2. Control of budget
___ 3. Maintain cost-accounting survey
___ 4. Survey and research market
___ 5. Advise on utilization of monies

___ B. Control of Resources
___ 1. Supplies and equipment
___ 2. Facilities
___ 3. Personnel
___ 4. Evaluate utilization of resources
___ 5. Contracts and agreements
___ 6. Financial processes

___ C. Organization Functions
___ 1. Records-Preparation and Maintenance
___ 2. Schedules
___ 3. Filing systems
___ 4. Library

___ D. Policies
1. Set policies within the framework of institutional policies
___ 2. Moniter adherence to policies (rules and regulations)
___ 3. Evaluate policies

___ F. Evaluative
___ 1. People

___ 2. Financial feasibility of changes and/or addition to the lab work and resources
___ 3. One's own administrative goals
___ 4. Accountability for the efficient and effective utilization of all resources in the lab or production of accurate and dependable lab results
___ 5. Decisions which have been made
___ 6. Solution of problems in administration
___ 7. Ability to provide guidance or assistance in the solution of personnel relations

___ G. Coordinate functions
1. Coordinate activities of total lab
2. Computerization
3. Systems analysis and design
4. Coordinate safety program with government standards
5. Prepare organizational charts

___ H. Education
___ 1. Participation in continuing education programs
___ 2. Plan in-service programs in administration and management
___ 3. Determine budget for continuing education needs
___ 4. Orientation for new employees
___ 5. Assist specialists in planning and presenting continuing education programs

___ I. Communicate
___ 1. Applicants
___ 2. Intra-lab communication
___ 3. Conduct correspondence
___ 4. Public relations
___ 5. Delegate authority and responsibility

___ J. Future planning
1. New facilities, equipment
___ 2. Space utilization
___ 3. Personnel
___ 4. Systems changes or additions
___ 5. Calculate financial involvement in all planning
___ 6. Anticipate changing role

___ K. Responsibilities
___ 1. Will make decisions when authority has been designated
___ 2. Will solve problems in administration and guide or assist in the solution of personnel relations
___ 3. Will assess attainment of laboratory goals and evaluate them as relative to the goals of the institution for total health care
___ 4. Will evaluate people, objectives, procedures, equipment and instruments

___ L. Moniter and maintain equipment and supplies
___ 1. Moniter and maintain safety measures
___ 2. Moniter expiration date of unstable materials
___ 3. Moniter preventive maintenance dates
___ 4. Maintain records of repairs
___ 5. Moniter supplies and materials
___ 6. Make minor repairs

___ M. Operational functions
___ 1. Personnel operations
___ 2. Procedures
___ 3. Organize and institute flow patterns of work
___ 4. Make recommendations for lab policies
___ 5. Make repairs on instruments
___ 6. Assume accountability for results
___ 7. Interpret results of procedures
___ 8. Provide consultation in area of specialty
___ 9. Provide information on standards for the job in specialty area
___ 10. Confer with manufacturers on equipment and supplies
___ 11. Make recommendations on ways of confirming results
___ 12. Provide a liaison between administration and employees
___ 13. Interview applicants for section
___ 14. Advise/counsel subordinates
___ 15. Provide personnel references

___ N. Education
___ 1. Assist in instruction of students
___ 2. Stimulate subordinates to participate in continuing education programs
___ 3. Provide in-service programs
___ 4. Orient employees to new equipment and procedures
___ 5. Determine needs of subordinates for continuing education

___ O. Plan for the future.
___ 1. Consider changes in organizational structure
___ 2. Anticipate changing role of laboratory personnel
___ 3. Anticipate changing job description

___ P. Evaluate
___ 1. People, capabilities, attitudes, potential performance
___ 2. Procedures, equipment
___ 3. Decision made regarding interpretation of results and recognize areas of need if present
___ 4. Criteria prepared to assist subordinate in solving problems
___ 5. Ability to solve problems
___ 6. One's own progress towards their goals/objectives

___ Q. Other tasks? Please indicate.

THANK YOU.

APPENDIX C

I. Premailing form: Clinical Lab Supervision Survey

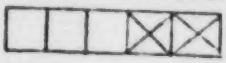
II. Cover Letter

CLINICAL LABORATORY SUPERVISION SURVEY

Copyright 1976 American Society for Medical Technology

SECTION I – General Information

1. Zip code: Please enter the first three digits of the zip code of your place of employment.



2. Place of employment: Select one.

1. [ ] federal-military
2. [ ] federal-nonmilitary
3. [ ] state, county or city operated hospital or nonhospital laboratory
4. [ ] private hospital
5. [ ] private independent lab
6. [ ] group practice or clinic
7. [ ] other (please specify) _____

3. If employed in a hospital, how many beds?

1. [ ] 1-99 beds
2. [ ] 100-299 beds
3. [ ] 300-500 beds
4. [ ] more than 500 beds

4. Highest level of formal education attained: Select one.

1. [ ] associate, (AA, AS)
2. [ ] baccalaureate, (BS, BA)
3. [ ] master's (MA, MS, MEd)
4. [ ] other (please specify) _____

5. Job category: Select the one which best describes your duties.

1. [ ] staff technologist
2. [ ] supervisor technologist
3. [ ] administrative (chief) technologist
4. [ ] education coordinator
5. [ ] other (please specify) _____

6. Total length of service in medical technology.

1. [ ] less than one year
2. [ ] 1-3 years
3. [ ] 4-5 years
4. [ ] 6-10 years
5. [ ] more than 10 years

7. Educational program: Select the one which best describes educational programs at your place of employment.

1. [ ] an accredited hospital-based M.T. or M.L.T. educational program
2. [ ] an accredited hospital component of a university-based M.T. or M.L.T. educational program
3. [ ] does not have an accredited educational program

– Please turn page –

8. Supervision: Please check the number of clinical laboratory personnel currently under your supervision.

1. [ ] 1-4 person(s)
2. [ ] 5-9 persons
3. [ ] 10-19 persons
4. [ ] 20 or more persons

If you are not employed in a clinical laboratory or do not currently supervise laboratory personnel, please complete and return SECTION I of the questionnaire only.

SECTION II — Supervisory Tasks

For each of the tasks listed below, indicate according to the following number code the job position of the individual who actually performs the task in your place of employment.

If the task is a joint function of individuals in more than one job position, place the number of additional job positions in the space provided under other.

1. STAFF TECHNOLOGIST
2. SUPERVISOR TECHNOLOGIST
3. ADMINISTRATIVE (CHIEF) TECHNOLOGIST
4. EDUCATION COORDINATOR
5. LABORATORY DIRECTOR – PATHOLOGIST
6. LABORATORY TECHNICIAN

Personnel Relations Tasks

other (please specify)

1. [ ] _____ determines academic, experience and personal qualifications
2. [ ] _____ interviews prospective employees
3. [ ] _____ selects prospective employees
4. [ ] _____ evaluates employee capabilities and performance
5. [ ] _____ recommends employee transfers and discipline
6. [ ] _____ recommends discharge of employees
7. [ ] _____ recommends hiring additional staff
8. [ ] _____ determines which employees are promoted to new positions

Direct Supervision Tasks

9. [ ] _____ trains new employees in laboratory procedures
10. [ ] _____ gives instruction on a daily basis
11. [ ] _____ trains employees on new equipment and procedures
12. [ ] _____ observes employee's technical performance of procedures
13. [ ] _____ organizes and institutes flow patterns of work
14. [ ] _____ prepares daily work schedule

– Please turn page –

Monitoring Tasks

other (please specify)

15. [ ] _____ reviews and monitors laboratory results for accuracy
16. [ ] _____ reviews and monitors laboratory results for abnormalities
17. [ ] _____ monitors adherence to established laboratory procedures
18. [ ] _____ monitors specimen collection, transport and storage
19. [ ] _____ reviews and revises written procedure manual
20. [ ] _____ reviews and approves new laboratory methods (techniques and tasks)
21. [ ] _____ reviews and monitors quality control program
22. [ ] _____ ensures safety program is in compliance with governmental standards

General Operations Tasks

23. [ ] _____ prepares and administers (section) budget
24. [ ] _____ maintains the preventative maintenance program
25. [ ] _____ monitors expiration date of unstable materials
26. [ ] _____ maintains appropriate inventory of supplies and reagents
27. [ ] _____ selects and orders expendable supplies
28. [ ] _____ selects equipment for purchase costing less than $5,000
29. [ ] _____ selects equipment for purchase costing $5,000 to $20,000
30. [ ] _____ selects equipment for purchase costing more than $20,000

Education Tasks

31. [ ] _____ develops curriculum for students
32. [ ] _____ designs content of student lectures
33. [ ] _____ instructs students in laboratory procedures and use of equipment
34. [ ] _____ evaluates student performance of laboratory procedures
35. [ ] _____ conducts in-service education programs in clinical lab
36. [ ] _____ establishes policy of employee participation in continuing education programs

Communications Tasks

37. [ ] _____ confers with patient physicians on laboratory findings
38. [ ] _____ provides consultation in area of specialty on laboratory results
39. [ ] _____ conducts laboratory correspondence including responding to inquiries related to the clinical education program
40. [ ] _____ represents laboratory in interdepartmental procedures and policy matters.

– Please turn page –

SECTION III – Teaching Importance

If you were designing a medical technology curriculum, in what sequence would you teach the six categories of supervisory tasks?

Please rank the six categories on a scale of 1 to 6 in the sequence which you feel is the order of their teaching importance. (1 = greatest importance).

Rank	Task Category
[ ]	Personnel Relations (tasks 1-8)
[ ]	Direct Supervision (tasks 9-14)
[ ]	Monitoring (tasks 15-22)
[ ]	General Operations (tasks 23-30)
[ ]	Education (tasks 31-36)
[ ]	Communications (tasks 37-40)

SECTION IV – Tasks Requiring the Most Time

Please rank the six categories on a scale of 1 to 6 according to the amount of your time the task category requires during a normal work week. (1 = the most time).

Rank	Task Category
[ ]	Personnel Relations (tasks 1-8)
[ ]	Direct Supervision (tasks 9-14)
[ ]	Monitoring (tasks 15-22)
[ ]	General Operations (tasks 23-30)
[ ]	Education (tasks 31-36)
[ ]	Communications (tasks 37-40)

– Please turn page –

CTION V – Type of Knowledge Required to Perform Supervisory Tasks

purpose of this section is to determine the type of knowledge required to perform selected supervisory s. Described below is a hierarchy of three types of knowledge; please check one of the three types of wledge which you feel is required for the listed supervisoty tasks.

Types of knowledge

1. requires dealing with patterns of interdependent or interacting parts, (e.g., interacting people)

2. involves changes of various kinds such as redefinitions or transitions in existing information, (e.g., changes in policies or procedures)

3. ability to explore mentally various courses of action so that the most effective one may be selected, (e.g., projecting new ways to classify a job)

<s

	Select one of the three types of knowledge for each task.		
	(1) PATTERNS	(2) CHANGES	(3) EXPLORE
nterview prospective employees	[ ]	[ ]	[ ]
elects prospective employees	[ ]	[ ]	[ ]
valuates employee capabilities and performance	[ ]	[ ]	[ ]
rganizes and institutes flow patterns of work	[ ]	[ ]	[ ]
repares daily work schedule	[ ]	[ ]	[ ]
eviews and monitors laboratory results for accuracy	[ ]	[ ]	[ ]
eviews and monitors quality control program	[ ]	[ ]	[ ]
nsures safety program is in compliance with governmental tandards	[ ]	[ ]	[ ]
repares and administers (section) budget	[ ]	[ ]	[ ]
naintains the preventative maintenance program	[ ]	[ ]	[ ]
onducts in-service education programs in clinical laboratory	[ ]	[ ]	[ ]
stablishes policy of employee participation in continuing ducation programs	[ ]	[ ]	[ ]
rovides consultation in area of specialty on laboratory esults	[ ]	[ ]	[ ]
onducts laboratory correspondence including responding o inquiries related to the clinical education program	[ ]	[ ]	[ ]
epresents laboratory in interdepartmental procedures and olicy matters	[ ]	[ ]	[ ]

nk You

American Society for Medical Technology
Suite 200 5555 West Loop South
Bellaire, Texas 77401
A/C 713 664 8131

Nancy Preuss
Executive Vice President

October 12, 1976

Dear ASMT Member:

Because of governmental activities at the federal and state levels, ASMT must be able to respond to questions about the medical technology profession. The 1975 Laboratory Management Survey, published in CADENCE May/June, 1976 documented the high involvement of administrative technologists in laboratory management.

As HEW is now preparing personnel standards for laboratories, it has become imperative to know what supervisory tasks are performed by medical technologists in the various job positions. The ASMT Board of Directors has authorized this survey as the second study of what medical technologists really do in the clinical laboratory.

This Clinical Laboratory Supervision Survey is being conducted jointly by ASMT and Kathleen McBride, a doctoral student at the University of Houston, and is designed to provide, statistically accurate information on the question of the medical technologist's role in the laboratory. The questionnaire is also designed to gain information which can guide curriculum planning in medical technology programs.

Your assistance in this activity will be appreciated. As a random sampling method is being used, it is particularly important that you complete and return the questionnaire in the envelope provided at your earliest convenience. ASMT guarantees anonymity of all responses.

Thank you for participating in this activity.

Sincerely,

Beverly J. Fiorella

Beverly Fiorella
President

BF:cr

APPENDIX D

I. Clinical Lab Supervision Survey

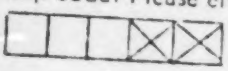
II. Cover Letter

CLINICAL LABORATORY SUPERVISION SURVEY

Copyright 1976 American Society for Medical Technology

SECTION I – General Information

1. Zip code: Please enter the first three digits of the zip code of your place of employment.



2. Place of employment: Select one.

1. [ ] federal-military
2. [ ] federal-nonmilitary
3. [ ] state, county or city operated hospital or nonhospital laboratory
4. [ ] private hospital
5. [ ] private independent lab
6. [ ] group practice or clinic
7. [ ] other (please specify) _____

3. If employed in a hospital, how many beds?

1. [ ] 1 99 beds
2. [ ] 100 299 beds
3. [ ] 300-500 beds
4. [ ] more than 500 beds

4. Highest level of formal education attained: Select one.

1. [ ] associate, (AA, AS)
2. [ ] baccalaureate, (BS, BA)
3. [ ] master's (MA, MS, MEd)
4. [ ] other (please specify) _____

5. Job category: Select the one which best describes your duties.

1. [ ] staff technologist
2. [ ] supervisor technologist
3. [ ] administrative (chief) technologist
4. [ ] education coordinator
5. [ ] other (please specify) _____

6. Total length of service in medical technology.

1. [ ] less than one year
2. [ ] 1-3 years
3. [ ] 4-5 years
4. [ ] 6-10 years
5. [ ] more than 10 years

7. Educational program: Select the one which best describes educational programs at your place of employment.

1. [ ] an accredited hospital-based M.T. or M.L.T. educational program
2. [ ] an accredited hospital component of a college-based M.T. or M.L.T. educational program
3. [ ] does not have an accredited educational program

– Please turn page –

8. Supervision: Please check the number of clinical laboratory personnel currently under your supervision.

1. [ ] 1-4 person(s)
2. [ ] 5-9 persons
3. [ ] 10-19 persons
4. [ ] 20 or more persons

SECTION II – Supervisory Tasks

For each of the tasks listed below, indicate according to the following number code the job position of the INDIVIDUAL WHO ACTUALLY PERFORMS THE TASK in your place of employment in the brackets provided.

1. STAFF TECHNOLOGIST
2. SUPERVISOR TECHNOLOGIST
3. ADMINISTRATIVE (CHIEF) TECHNOLOGIST
4. EDUCATION COORDINATOR
5. LABORATORY DIRECTOR – PATHOLOGIST
6. LABORATORY TECHNICIAN

Personnel Relations Tasks

other (please specify)

1. [ ] _____ determines academic, experience and personal qualifications
2. [ ] _____ interviews prospective employees
3. [ ] _____ selects prospective employees
4. [ ] _____ evaluates employee capabilities and performance
5. [ ] _____ recommends employee transfers and discipline
6. [ ] _____ recommends discharge of employees
7. [ ] _____ recommends hiring additional staff
8. [ ] _____ determines which employees are promoted to new positions

Direct Supervision Tasks

9. [ ] _____ trains new employees in laboratory procedures
10. [ ] _____ gives instruction on a daily basis
11. [ ] _____ trains employees on new equipment and procedures
12. [ ] _____ observes employee's technical performance of procedures
13. [ ] _____ organizes and institutes flow patterns of work
14. [ ] _____ prepares daily work schedule

– Please turn page –

other (please specify)

15. [ ] _____ reviews and monitors laboratory results for accuracy
16. [ ] _____ reviews and monitors laboratory results for abnormalities
17. [ ] _____ monitors adherence to established laboratory procedures
18. [ ] _____ monitors specimen collection, transport and storage
19. [ ] _____ reviews and revises written procedure manual
20. [ ] _____ reviews and approves new laboratory methods (techniques and tasks)
21. [ ] _____ reviews and monitors quality control program
22. [ ] _____ ensures safety program is in compliance with governmental standards

General Operations Tasks

23. [ ] _____ prepares and administers (section) budget
24. [ ] _____ maintains the preventative maintenance program
25. [ ] _____ monitors expiration date of unstable materials
26. [ ] _____ maintains appropriate inventory of supplies and reagents
27. [ ] _____ selects and orders expendable supplies
28. [ ] _____ selects equipment for purchase costing less than $5,000
29. [ ] _____ selects equipment for purchase costing $5,000 to $20,000
30. [ ] _____ selects equipment for purchase costing more than $20,000

Education Tasks

31. [ ] _____ develops curriculum for students
32. [ ] _____ designs content of student lectures
33. [ ] _____ instructs students in laboratory procedures and use of equipment
34. [ ] _____ evaluates student performance of laboratory procedures
35. [ ] _____ conducts in service education programs in clinical lab
36. [ ] _____ establishes policy of employee participation in continuing education programs

Communications Tasks

37. [ ] _____ confers with patient physicians on laboratory findings
38. [ ] _____ provides consultation in area of specialty on laboratory results
39. [ ] _____ conducts laboratory correspondence including responding to inquiries related to the clinical education program
40. [ ] _____ represents laboratory in interdepartmental procedures and policy matters.

– Please turn page –

SECTION III – Teaching Importance

If you were designing a medical technology curriculum, in what sequence would you teach the six categories of supervisory tasks?

Please rank the six categories on a scale of 1 to 6 in the sequence which you feel is the order of their teaching importance. (1 = greatest importance).

Rank	Task Category
[ ]	Personnel Relations (tasks 1-8)
[ ]	Direct Supervision (tasks 9 14)
[ ]	Monitoring (tasks 15-22)
[ ]	General Operations (tasks 23 30)
[ ]	Education (tasks 31-36)
[ ]	Communications (tasks 37-40)

SECTION IV – Tasks Requiring the Most Time

Please rank the six categories on a scale of 1 to 6 according to the amount of your time the task category requires during a normal work week. (1 = the most time).

Rank	Task Category
[ ]	Personnel Relations (tasks 1 8)
[ ]	Direct Supervision (tasks 9-14)
[ ]	Monitoring (tasks 15 22)
[ ]	General Operations (tasks 23-30)
[ ]	Education (tasks 31-36)
[ ]	Communications (tasks 37-40.)

– Please turn page –

SECTION V — Type of Knowledge Required to Perform Supervisory Tasks

The purpose of this section is to determine the type of knowledge required to perform selected supervisory tasks. Described below is a hierarchy of three types of knowledge; please check one of the three types of knowledge which you feel is required for the listed supervisoty tasks.

Types of knowledge

1. requires dealing with patterns of interdependent or interacting parts, (e.g., interacting people)

2. involves changes of various kinds such as redefinitions or transitions in existing information, (e.g., changes in policies or procedures)

3. ability to explore mentally various courses of action so that the most effective one may be selected, (e.g., projecting new ways to classify a job)

Tasks	Select one of the three types of knowledge for each task.		
	(1) PATTERNS	(2) CHANGES	(3) EXPLORE
1. interview prospective employees	[ ]	[ ]	[ ]
2. selects prospective employees	[ ]	[ ]	[ ]
3. evaluates employee capabilities and performance	[ ]	[ ]	[ ]
4. organizes and institutes flow patterns of work	[ ]	[ ]	[ ]
5. prepares daily work schedule	[ ]	[ ]	[ ]
6. reviews and monitors laboratory results for accuracy	[ ]	[ ]	[ ]
7. reviews and monitors quality control program	[ ]	[ ]	[ ]
8. ensures safety program is in compliance with governmental standards	[ ]	[ ]	[ ]
9. prepares and administers (section) budget	[ ]	[ ]	[ ]
10. maintains the preventative maintenance program	[ ]	[ ]	[ ]
11. conducts in-service education programs in clinical laboratory	[ ]	[ ]	[ ]
12. establishes policy of employee participation in continuing education programs	[ ]	[ ]	[ ]
13. provides consultation in area of specialty on laboratory results	[ ]	[ ]	[ ]
14. conducts laboratory correspondence including responding to inquiries related to the clinical education program	[ ]	[ ]	[ ]
15. represents laboratory in interdepartmental procedures and policy matters	[ ]	[ ]	[ ]

Thank You

American Society for Medical Technology
Suite 200 5555 West Loop South
Bellaire, Texas 77401
A/C 713 664-6121

Nancy Preuss
Executive Vice President

November 2, 1976

Dear ASMT Member:

Because of governmental activities at the federal and state levels, ASMT must be able to respond to questions about the medical technology profession. The 1975 Laboratory Management Survey, published in CADUCEUS May/June, 1976 documented the high involvement of administrative technologists in laboratory management.

As HEW is now preparing personnel standards for laboratories, it has become imperative to know what supervisory tasks are performed by medical technologists in the various job positions. The ASMT Board of Directors has authorized this survey as the second study of what medical technologists really do in the clinical laboratory.

This Clinical Laboratory Supervision Survey is being conducted jointly by ASMT and Kathleen McBride, a doctoral student at the University of Houston, and is designed to provide, statistically accurate information on the question of the medical technologist's role in the laboratory. The questionnaire is also designed to gain information which can guide curriculum planning in medical technology programs.

Your assistance in this activity will be appreciated. As a random sampling method is being used, it is particularly important that you complete and return the questionnaire in the envelope provided at your earliest convenience. ASMT guarantees anonymity of all responses.

Thank you for participating in this activity.

Sincerely,

Beverly J. Fiorella

Beverly Fiorella
President

BF:cr

APPENDIX E

Follow-Up Postcard

Dear ASMT member:

Recently we mailed you a questionnaire asking for your participation in the important CLINICAL LAB SUPERVISION SURVEY.

If you have already returned the questionnaire, please consider this card a "thank you" for your valuable help.

If you have not had a chance to do so as yet, may we ask you to return the completed form as soon as possible. Your participation is vital to the success of this study and we appreciate your consideration of this request.

Sincerely,

Kathy McBride
Mary Buxton
Project Directors

APPENDIX F

Performers of Direct Supervision Tasks

Table 25

Performers of Direct Supervision Tasks in the Clinical Laboratory

Laboratory Supervisors' Selection

Direct Supervision Tasks	Laboratory Supervisors' Selection of Tasks' Performers[a]										Total Row Count
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab. Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
trains new employees in laboratory procedures	20 (12%)	78 (49%)	2 (1%)	- -	- -	3 (2%)	57 (36%)	- -	- -	- -	160 (100%)
gives instruction on a daily basis	13 (8%)	86 (56%)	6 (4%)	3 (2%)	- -	3 (2%)	38 (25%)	1 (1%)	1 (1%)	1 (1%)	152 (100%)
trains employees on new equipment and procedures	10 (7%)	94 (59%)	5 (3%)	- -	- -	2 (1%)	47 (29%)	2 (1%)	- -	- -	160 (100%)
observes employee's performance of procedures	7 (4%)	127 (79%)	4 (3%)	- -	- -	1 (1%)	20 (12%)	1 (1%)	- -	- -	160 (100%)
organizes and institutes flow patterns of work	3 (2%)	119 (75%)	11 (7%)	- -	- -	1 (1%)	23 (14%)	2 (1%)	- -	- -	159 (100%)
prepares daily work schedule	2 (1%)	109 (69%)	18 (11%)	- -	1 (1%)	2 (1%)	24 (15%)	2 (1%)	1 (1%)	- -	159 (100%)

[a] Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 26

Performers of Direct Supervision Tasks in the Clinical Laboratory
Administrative Technologists' Selection

Direct Supervision Tasks	Administrative Technologists' Selection of Tasks' Performers[a]										Total Row Count
	1 Staff Tech.	2 Lab. Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
trains new employees in laboratory procedures	20 (14%)	57 (41%)	29 (21%)	1 (1%)	1 (1%)	- -	24 (17%)	1 (1%)	6 (4%)	- -	139 (100%)
gives instruction on a daily basis	20 (15%)	62 (45%)	28 (20%)	1 (1%)	- -	1 (1%)	20 (15%)	- -	4 (2%)	1 (1%)	137 (100%)
trains employees on new equipment and procedures	6 (4%)	54 (39%)	42 (30%)	1 (1%)	- -	2 (1%)	29 (21%)	- -	5 (4%)	- -	139 (100%)
observes employee's performance of procedures	4 (3%)	59 (43%)	49 (35%)	- -	- -	- -	20 (14%)	1 (1%)	5 (4%)	- -	138 (100%)
organizes and institutes flow patterns of work	2 (1%)	41 (29%)	70 (51%)	- -	1 (1%)	1 (1%)	19 (14%)	- -	4 (3%)	- -	138 (100%)
prepares daily work schedule	2 (1%)	47 (34%)	75 (54%)	- -	- -	2 (1%)	9 (8%)	- -	2 (1%)	2 (1%)	139 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 27

Performers of Direct Supervision Tasks in the Clinical Laboratory Education Coordinators' Selection

Direct Supervision Tasks	Education Coordinators' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
trains new employees in laboratory procedures	25 (28%)	25 (28%)	- -	3 (3%)	- -	1 (1%)	24 (27%)	1 (1%)	1 (1%)	10 (11%)	90 (100%)
gives instruction on a daily basis	19 (21%)	22 (25%)	- -	13 (14%)	- -	2 (2%)	22 (25%)	- -	2 (2%)	10 (11%)	90 (100%)
trains employees on new equipment and procedures	10 (11%)	36 (40%)	- -	1 (1%)	- -	1 (1%)	30 (34%)	1 (1%)	1 (1%)	10 (11%)	90 (100%)
observes employee's performance of procedures	3 (4%)	53 (60%)	1 (1%)	1 (1%)	1 (1%)	1 (1%)	18 (20%)	1 (1%)	- -	10 (11%)	89 (100%)
organizes and institutes flow patterns of work	1 (1%)	51 (57%)	8 (9%)	- -	1 (1%)	- -	15 (17%)	3 (3%)	1 (1%)	10 (11%)	90 (100%)
prepares daily work schedule	3 (4%)	52 (59%)	10 (11%)	- -	1 (1%)	- -	8 (9%)	2 (2%)	2 (2%)	11 (12%)	89 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 28

Performers of Direct Supervision Tasks in the Clinical Laboratory Staff Technologists' Selection

Direct Supervision Tasks	Staff Technologists' Selection of Tasks' Performers[a]										
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
trains new employees in laboratory procedures	41 (41%)	20 (20%)	5 (5%)	- -	- -	1 (1%)	27 (27%)	- -	4 (4%)	2 (2%)	100 (100%)
gives instruction on a daily basis	30 (33%)	26 (28%)	7 (8%)	3 (3%)	- -	1 (1%)	18 (20%)	- -	4 (4%)	3 (3%)	92 (100%)
trains employees on new equipment and procedures	27 (27%)	32 (32%)	9 (9%)	1 (1%)	- -	1 (1%)	26 (26%)	- -	2 (2%)	2 (2%)	100 (100%)
observes employee's performance of procedures	17 (17%)	47 (47%)	10 (10%)	- -	2 (2%)	- -	18 (18%)	1 (1%)	3 (3%)	2 (2%)	100 (100%)
organizes and institutes flow patterns of work	16 (16%)	56 (56%)	11 (11%)	1 (1%)	1 (1%)	1 (1%)	10 (10%)	2 (2%)	- -	2 (2%)	100 (100%)
prepares daily work schedule	11 (11%)	56 (56%)	19 (19%)	- -	- -	2 (2%)	9 (9%)	- -	- -	3 (3%)	100 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

APPENDIX G

Performers of General Operations Tasks

Table 29

Performers of General Operations Tasks in the Clinical Laboratory
Laboratory Supervisors' Selection

General Operations Tasks	Laboratory Supervisors' Selection of Tasks' Performers[a]										Total Row Count
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
prepares, administers (section) budget	-	27 (17%)	62 (39%)	1 (1%)	30 (19%)	-	9 (5%)	17 (11%)	11 (7%)	2 (1%)	159 (100%)
maintains the preventative maintenance program	5 (3%)	89 (56%)	15 (9%)	1 (1%)	4 (3%)	-	39 (24%)	-	6 (4%)	-	159 (100%)
monitors expiration date of unstable materials	22 (14%)	79 (49%)	5 (3%)	-	-	4 (2%)	48 (30%)	-	3 (2%)	-	161 (100%)
maintains appropriate inventory of supplies and reagents	14 (9%)	85 (53%)	11 (7%)	-	-	4 (2%)	48 (27%)	-	3 (2%)	-	160 (100%)
selects and orders expendable supplies	10 (6%)	84 (52%)	21 (13%)	1 (1%)	-	5 (3%)	35 (22%)	2 (1%)	3 (2%)	-	161 (100%)
selects equipment for purchase costing less than $5,000	1 (1%)	36 (22%)	28 (17%)	1 (1%)	32 (20%)	-	21 (13%)	38 (24%)	3 (2%)	-	160 (100%)
selects equipment for purchase costing $5,000 to $20,000	-	14 (9%)	21 (13%)	-	51 (32%)	-	12 (8%)	58 (36%)	3 (2%)	-	159 (100%)
selects equipment for purchase costing more than $20,000	-	9 (6%)	22 (14%)	-	55 (35%)	-	11 (7%)	56 (35%)	5 (3%)	-	158 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 30

Performers of General Operations Tasks in the Clinical Laboratory
Administrative Technologists' Selection

General Operations Tasks	Administrative Technologists' Selection of Tasks' Performer[a]										Total Row Count
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
prepares, administers (section) budget	-	4 (3%)	88 (65%)	-	16 (12%)	-	2 (1%)	16 (12%)	7 (5%)	3 (2%)	136 (100%)
maintains the preventative maintenance program	13 (9%)	42 (30%)	56 (41%)	-	-	3 (3%)	15 (11%)	-	9 (6%)	-	138 (100%)
monitors expiration date of unstable materials	33 (24%)	53 (38%)	22 (16%)	-	-	4 (3%)	17 (12%)	-	9 (7%)	-	138 (100%)
maintains appropriate inventory of supplies and reagents	24 (17%)	39 (28%)	45 (33%)	-	-	3 (2%)	23 (17%)	-	4 (3%)	-	138 (100%)
selects and orders expendable supplies	6 (4%)	30 (22%)	74 (53%)	-	-	1 (1%)	21 (15%)	1 (1%)	5 (4%)	-	138 (100%)
selects equipment for purchase costing less than $5,000	-	2 (1%)	66 (48%)	-	21 (15%)	-	6 (4%)	35 (26%)	8 (6%)	-	138 (100%)
selects equipment for purchase costing $5,000 to $20,000	-	-	41 (30%)	-	32 (23%)	-	7 (5%)	47 (35%)	8 (6%)	1 (1%)	136 (100%)
selects equipment for purchase costing more than $20,000	-	-	34 (25%)	-	38 (28%)	-	4 (3%)	49 (36%)	9 (7%)	2 (1%)	136 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 31

Performers of General Operations Tasks in the Clinical Laboratory
Education Coordinators' Selection

General Operations Tasks	Education Coordinators' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
prepares, administers (section) budget	-	10	38	-	12	1	2	14	3	10	90
	-	(11%)	(42%)	-	(13%)	(1%)	(2%)	(16%)	(4%)	(11%)	(100%)
maintains the preventative maintenance program	7	41	7	1	2	1	17	-	3	10	89
	(8%)	(46%)	(8%)	(1%)	(2%)	(1%)	(19%)	-	(4%)	(11%)	(100%)
monitors expiration date of unstable materials	16	34	3	-	-	2	23	-	2	10	90
	(18%)	(38%)	(3%)	-	-	(2%)	(26%)	-	(2%)	(11%)	(100%)
maintains appropriate inventory of supplies and reagents	13	34	6	-	-	2	22	-	3	10	90
	(14%)	(38%)	(7%)	-	-	(2%)	(25%)	-	(3%)	(11%)	(100%)
selects and orders expendable supplies	8	33	15	-	-	1	20	1	2	10	90
	(9%)	(37%)	(17%)	-	-	(1%)	(22%)	(1%)	(2%)	(11%)	(100%)
selects equipment for purchase costing less than $5,000	-	12	12	-	18	1	4	30	1	10	88
	-	(14%)	(14%)	-	(20%)	(1%)	(5%)	(34%)	(1%)	(11%)	(100%)
selects equipment for purchase costing $5,000 to $20,000	-	4	8	-	25	1	1	38	2	10	89
	-	(5%)	(9%)	-	(28%)	(1%)	(1%)	(43%)	(2%)	(11%)	(100%)
selects equipment for purchase costing more than $20,000	-	3	5	-	28	1	-	38	3	11	89
	-	(3%)	(6%)	-	(32%)	(1%)	-	(43%)	(3%)	(12%)	(100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 32

Performers of General Operations Tasks in the Clinical Laboratory

Staff Technologists' Selection

General Operations Tasks	Staff Technologists' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
prepares, administers (section) budget	-	11 (12%)	46 (49%)	-	18 (19%)	1 (1%)	6 (6%)	7 (7%)	4 (4%)	2 (2%)	95 (100%)
maintains the preventative maintenance program	24 (25%)	31 (32%)	18 (19%)	-	-	2 (2%)	14 (14%)	2 (2%)	4 (4%)	2 (2%)	97 (100%)
monitors expiration date of unstable materials	40 (41%)	25 (26%)	3 (3%)	-	-	3 (3%)	23 (23%)	1 (1%)	1 (1%)	2 (2%)	98 (100%)
maintains appropriate inventory of supplies and reagents	28 (29%)	28 (29%)	9 (9%)	-	1 (1%)	3 (3%)	20 (21%)	1 (1%)	5 (5%)	2 (2%)	97 (100%)
selects and orders expendable supplies	19 (20%)	30 (30%)	19 (20%)	-	-	3 (3%)	19 (20%)	1 (1%)	4 (4%)	2 (2%)	97 (100%)
selects equipment for purchase costing less than $5,000	3 (3%)	21 (22%)	26 (27%)	-	13 (14%)	1 (1%)	5 (5%)	23 (24%)	2 (2%)	2 (2%)	96 (100%)
selects equipment for purchase costing $5,000 to $20,000	1 (1%)	6 (6%)	21 (22%)	-	27 (29%)	1 (1%)	5 (5%)	27 (29%)	5 (5%)	2 (2%)	95 (100%)
selects equipment for purchase costing more than $20,000	1 (1%)	3 (3%)	20 (21%)	-	32 (34%)	1 (1%)	1 (1%)	30 (32%)	5 (5%)	2 (2%)	95 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

APPENDIX H

Performers of Education Tasks

Table 33

Performers of Education Tasks in the Clinical Laboratory

Laboratory Supervisors' Selection

Education Tasks	Laboratory Supervisors' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	9 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
develops curriculum for students	1 (1%)	21 (15%)	6 (4%)	51 (35%)	2 (1%)	-	18 (12%)	10 (7%)	4 (3%)	32 (22%)	145 (100%)
designs content of student lectures	2 (1%)	30 (20%)	5 (4%)	34 (24%)	12 (8%)	-	11 (8%)	11 (8%)	5 (4%)	33 (23%)	143 (100%)
instructs students in laboratory procedures and use of equipment	16 (11%)	35 (23%)	5 (3%)	5 (3%)	-	2 (2%)	46 (32%)	5 (3%)	4 (3%)	29 (20%)	145 (100%)
evaluates student performance of laboratory procedures	9 (6%)	46 (32%)	5 (3%)	5 (3%)	-	1 (1%)	36 (25%)	4 (3%)	8 (6%)	30 (21%)	144 (100%)
conducts in-service education programs in clinical lab	- -	30 (20%)	22 (15%)	21 (14%)	11 (7%)	1 (<1%)	16 (11%)	23 (16%)	1 (1%)	23 (16%)	148 (100%)
establishes policy of employee participation in continuing education programs	1 (1%)	18 (12%)	38 (25%)	13 (9%)	30 (20%)	-	11 (7%)	19 (13%)	2 (1%)	18 (12%)	150 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 34

Performers of Education Tasks in the Clinical Laboratory

Administrative Technologists' Selection

Education Tasks	Administrative Technologists' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
develops curriculum for students	-	3	13	30	4	-	4	5	5	40	104
	-	(3%)	(12%)	(29%)	(4%)	-	(4%)	(5%)	(5%)	(38%)	(100%)
designs content of student lectures	-	9	12	23	4	-	6	6	4	40	104
	-	(9%)	(11%)	(22%)	(4%)	-	(6%)	(6%)	(4%)	(38%)	(100%)
instructs students in laboratory procedures and use of equipment	11	13	9	5	-	-	22	3	4	38	105
	(10%)	(12%)	(9%)	(5%)	-	-	(21%)	(3%)	(4%)	(36%)	(100%)
evaluates student performance of laboratory procedures	5	16	12	6	-	-	22	2	4	37	104
	(5%)	(15%)	(11%)	(6%)	-	-	(21%)	(2%)	(4%)	(36%)	(100%)
conducts in-service education programs in clinical lab	1	9	38	14	11	-	14	21	3	12	123
	(1%)	(7%)	(31%)	(11%)	(9%)	-	(11%)	(17%)	(3%)	(10%)	(100%)
establishes policy of employee participation in continuing education programs	-	3	74	2	10	-	3	17	5	11	125
	-	(2%)	(59%)	(2%)	(8%)	-	(2%)	(14%)	(4%)	(9%)	(100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 35

Performers of Education Tasks in the Clinical Laboratory

Education Coordinators' Selection

Education Tasks	Education Coordinators' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
develops curriculum for students	-	-	-	64	-	-	4	6	5	11	90
	-	-	-	(71%)	-	-	(4%)	(7%)	(6%)	(12%)	(100%)
designs content of student lectures	3	4	-	50	2	-	6	7	7	11	90
	(3%)	(4%)	-	(56%)	(2%)	-	(7%)	(8%)	(8%)	(12%)	(100%)
instructs students in laboratory procedures and use of equipment	22	11	-	6	-	1	25	3	11	11	90
	(25%)	(12%)	-	(7%)	-	(1%)	(28%)	(3%)	(12%)	(12%)	(100%)
evaluates student performance of laboratory procedures	13	17	-	11	-	-	25	1	12	11	90
	(15%)	(19%)	-	(12%)	-	-	(28%)	(1%)	(13%)	(12%)	(100%)
conducts in-service education programs in clinical lab	1	6	1	36	5	-	12	12	3	13	89
	(1%)	(7%)	(1%)	(41%)	(6%)	-	(13%)	(13%)	(3%)	(15%)	(100%)
establishes policy of employee participation in continuing education programs	-	1	14	19	11	-	6	17	5	16	89
	-	(1%)	(16%)	(21%)	(12%)	-	(7%)	(19%)	(6%)	(18%)	(100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 36

Performers of Education Tasks in the Clinical Laboratory

Staff Technologists' Selection

Education Tasks	Staff Technologists' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
develops curriculum for students	2 (2%)	9 (11%)	3 (4%)	34 (41%)	- -	1 (1%)	8 (10%)	4 (5%)	- -	21 (26%)	82 (100%)
designs content of student lectures	4 (5%)	8 (10%)	1 (1%)	29 (35%)	3 (4%)	1 (1%)	9 (11%)	3 (4%)	2 (2%)	22 (27%)	82 (100%)
instructs students in laboratory procedures and use of equipment	22 (27%)	6 (7%)	1 (1%)	7 (9%)	- -	1 (1%)	21 (25%)	- -	4 (5%)	21 (25%)	83 (100%)
evaluates student performance of laboratory procedures	12 (15%)	17 (21%)	3 (4%)	7 (8%)	- -	1 (1%)	16 (19%)	1 (1%)	5 (6%)	21 (25%)	83 (100%)
conducts in-service education programs in clinical lab	2 (3%)	11 (13%)	11 (13%)	17 (20%)	6 (7%)	1 (1%)	6 (7%)	9 (11%)	2 (2%)	19 (23%)	84 (100%)
establishes policy of employee participation in continuing education programs	1 (1%)	9 (10%)	23 (26%)	14 (16%)	13 (14%)	1 (1%)	5 (5%)	6 (7%)	- -	18 (20%)	90 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), NA = not applicable.

APPENDIX I

Performers of Communications Tasks

Table 37

Performers of Communications Tasks in the Clinical Laboratory

Laboratory Supervisors' Selection

Communications Tasks	Laboratory Supervisors' Selection of Tasks' Performers[a]										Total Row Count
	1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	
confers with patient physicians on laboratory findings	6 (4%)	28 (17%)	4 (3%)	- -	54 (34%)	2 (1%)	11 (7%)	53 (33%)	2 (1%)	- -	160 (100%)
provides consultation in area of specialty on lab results	2 (1%)	25 (16%)	6 (4%)	1 (1%)	85 (55%)	- -	6 (4%)	27 (17%)	2 (1%)	2 (1%)	156 (100%)
conducts lab correspondence including matters related to the clinical education program	1 (1%)	15 (10%)	44 (29%)	27 (18%)	18 (12%)	- -	8 (5%)	24 (16%)	11 (7%)	4 (2%)	152 (100%)
represents laboratory in inter-departmental procedures and policy matters	1 (1%)	22 (14%)	63 (40%)	3 (2%)	19 (12%)	- -	6 (4%)	40 (25%)	2 (1%)	2 (1%)	158 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 38

Performers of Communications Tasks in the Clinical Laboratory
Administrative Technologists' Selection

Communications Tasks	Administrative Technologists' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
confers with patient physicians on laboratory findings	3 (2%)	6 (4%)	26 (19%)	-	48 (35%)	-	5 (4%)	45 (32%)	4 (3%)	1 (1%)	138 (100%)
provides consultation in areas of specialty on lab results	1 (1%)	11 (8%)	16 (12%)	-	78 (57%)	-	2 (2%)	24 (18%)	3 (2%)	-	135 (100%)
conducts lab correspondence including matters related to the clinical education program	- -	2 (2%)	70 (53%)	11 (8%)	13 (10%)	-	- -	18 (14%)	6 (5%)	11 (8%)	131 (100%)
represents laboratory in inter-departmental procedures and policy matters	- -	1 (1%)	93 (68%)	-	9 (7%)	-	3 (2%)	26 (19%)	1 (1%)	3 (2%)	136 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 39

Performers of Communications Tasks in the Clinical Laboratory

Education Coordinators' Selection

Communications Tasks	Education Coordinators' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
confers with patient physicians on laboratory findings	3 (3%)	3 (3%)	5 (6%)	- -	33 (37%)	- -	3 (3%)	30 (34%)	2 (2%)	11 (12%)	90 (100%)
provides consultation in area of specialty on lab results	- -	6 (7%)	2 (2%)	- -	52 (58%)	1 (1%)	3 (3%)	14 (16%)	1 (1%)	11 (12%)	90 (100%)
conducts lab correspondence including matters related to the clinical education program	- -	2 (2%)	2 (2%)	46 (51%)	3 (3%)	- -	2 (2%)	14 (16%)	9 (10%)	12 (14%)	90 (100%)
represents laboratory in inter-departmental procedures and policy matters	- -	2 (2%)	31 (35%)	- -	13 (15%)	1 (1%)	3 (3%)	26 (29%)	4 (4%)	10 (11%)	90 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

Table 40

Performers of Communications Tasks in the Clinical Laboratory

Staff Technologists' Selection

Communications Tasks	Staff Technologists' Selection of Tasks' Performers[a] 1 Staff Tech.	2 Lab Super.	3 Adm. Tech.	4 Ed. Coor.	5 Path.	6 Lab Tech.	7 Joint Function	8 Joint Function	9 Joint Function	10 NA	Total Row Count
confers with patient physicians on laboratory findings	10 (10%)	10 (10%)	3 (3%)	-	34 (35%)	1 (1%)	10 (10%)	25 (26%)	3 (3%)	2 (2%)	98 (100%)
provides consultation in area of specialty on lab results	6 (7%)	13 (14%)	8 (9%)	-	41 (45%)	-	5 (5%)	16 (17%)	-	3 (3%)	92 (100%)
conducts lab correspondence including matters related to the clinical education program	3 (3%)	11 (12%)	36 (39%)	11 (12%)	7 (7%)	1 (1%)	7 (7%)	9 (10%)	5 (6%)	3 (3%)	93 (100%)
represents laboratory in inter-departmental procedures and policy matters	2 (2%)	15 (16%)	44 (46%)	-	12 (12%)	1 (1%)	6 (6%)	13 (14%)	-	3 (3%)	96 (100%)

[a]Tasks' Performers: 1 = Staff Technologist, 2 = Lab Supervisor, 3 = Administrative Technologist, 4 = Education Coordinator, 5 = Laboratory Director-Pathologist, 6 = Lab Technician, 7 = Joint Function of (2) and others except (5), 8 = Joint Function of (5) and others, 9 = Joint Function excluding (2) and (5), 10 = not applicable.

VITA

VITA

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MT(ASCP):	St. Luke's Episcopal Hospital, 1971
B.S. in Biology:	University of Houston, Houston, 1971
Pre-college:	Spring Branch School District in Houston, Texas

REGISTRY:

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PROFESSIONAL EXPERIENCE:

1977 to present	Administrative Intern Office of the Dean, U. of Texas, Houston
1975-1977	Medical Lab Technician Instructor Houston Community College
1973-1975	Medical Technology Instructor, U. of Texas, Galveston
1971-1973	Medical Technologist, St. Luke's Hospital
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PROFESSIONAL MEMBERSHIP:

American Society for Medical Technology (ASMT)

HONORS AND AWARDS:

Grant recipient to conduct research study for ASMT on "Task Analysis of Medical Technology Administration and Supervision as a Foundation to a Curriculum Ladder"

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Beta Beta Beta Biology Award, 1968

Alpha Lambda Delta, 1968

Valedictorian Scholarship, 1967-1968

Grant recipient for a trip to Europe with Houston All-City Symphony, 1966

WORKSHOPS PRESENTED:

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WRITINGS:

"Introduction to Erythrocytes" indexed in Self-Instructional Materials Project, P. O. Box 2686, Chapel Hill, N. C. 27514

TO BE PUBLISHED:

"Task Analysis of Medical Technology Administration and Supervision as a Foundation to a Curriculum Ladder"